U.S. ARMY CORPS OF ENGINEERS
NORTHWESTERN DIVISION
RECORD OF CONSULTATION AND STATEMENT OF DECISION

on

Effects to Listed Species from Operations of the Federal Columbia River Power System issued by the U.S. Fish and

Wildlife Service on December 20, 2000

and

Reinitiation of Consultation on Operation of the Federal Columbia River Power System, Including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation Projects in the Columbia Basin Biological Opinion issued by National Marine Fisheries Service on December 21, 2000

May 2001

Executive Summary

This Record of Consultation and Statement of Decision (2001

ROCASOD) is the U.S. Army Corps of Engineers (Corps) response to the recommendations in the Endangered Species Act (ESA) Section 7 Biological Opinion on Effects to Listed Species from Operations of the Federal Columbia River Power System (FCRPS) issued by the U.S. Fish and Wildlife Service (USFWS) on December 20, 2000 (USFWS 2000 BiOp) as amended by letter dated January 25, 2001, and the Biological Opinion issued by National Marine Fisheries Service (NMFS) on December 21, 2000 on the Reinitiation of Consultation on Operation of the Federal Columbia River Power System, Including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation (Reclamation) Projects in the Columbia Basin (NMFS 2000 BiOp). Those BiOps addressed the effects of the FCRPS on listed anadromous species, resident fish and wildlife species and plant species in the Pacific Northwest.

The 2001 ROCASOD addresses the operation of and certain actions at Dworshak, Lower Granite, Little Goose, Lower Monumental, Ice Harbor, Libby, Albeni Falls, Chief Joseph, McNary, John Day, The Dalles and Bonneville projects located in the states of Idaho, Oregon, Montana and Washington. These Corps projects along with Grand Coulee and Hungry Horse Dams operated by the Bureau of Reclamation make up the Federal Columbia River Power System. The 2001 ROCASOD also addresses NMFS 2000 BiOp habitat and hatchery actions.

The Corps concurs with NMFS's determination that the integrated operation of the FCRPS by the three action agencies, in a manner consistent with the NMFS 2000 BiOp, will avoid jeopardy to listed anadromous fish stocks and will ensure the survival and recovery of the listed species. The Corps also concurs with USFWS's determination that the integrated operation of the FCRPS by the three action agencies, in a manner consistent with the USFWS 2000 BiOp, will avoid jeopardy to listed Kootenai River white sturgeon and bull trout and will ensure the survival and recovery of the listed species.

The Corps has evaluated the effects of the certain operational actions to be implemented utilizing past NEPA documents. The last system NEPA document was the System Operation Review EIS (SOR EIS) completed with the issuance of a Record of Decision in 1997. The Corps believes that the effects are within the range of the analysis conducted in the SOR EIS. Except for studies of certain future operations and structural modifications of the projects, the Corps has determined that the effects of the operations to be within the analysis contained in the existing NEPA documentation. There are other laws and regulations that the Corps is responsible to consider in making decisions on the actions contained in the NMFS and USFWS 2000 BiOps. The Corps has evaluated the hydropower operations described in the BiOps and has considered the effects of those actions in regard to any standards or requirements set forth in these laws and

regulations in making decisions in this 2001 ROCASOD.

FLOW MANAGEMENT

The NMFS and USFWS 2000 BiOps call for operating the FCRPS to meet flow objectives set for listed salmon, steelhead and white sturgeon. The Corps' in-season decisions on shaping (timing and amount) of water releases (flow augmentation, spill, etc.) during the migration and fish passage season are made after considering recommendations of the Technical Management Team (TMT). The TMT includes federal, state and tribal representatives who meet throughout the year to monitor and evaluate the shaping of available water based on real time flow and biological information during the fish passage season. The TMT makes recommendations on water management and system operations to the Actions Agencies, which include the Corps, Reclamation and Bonneville Power Administration (BPA). In coordination with NMFS and USFWS, the Corps may adopt a different operation, including an operation for flood control, approved research, emergencies, to meet other requirements or operations for other project uses. Unless the Corps determines that alternative operations should be implemented, the Corps plans to operate the following projects as follows:

- **Dworshak.** Between April and June, the Corps may draft the project if

needed for flood control, refill by June 30 or provide spring flow augmentation as coordinated with TMT. Dworshak may be drafted as low as elevation 1520 by August 31 to provide flow augmentation and temperature moderation in the lower Clearwater and Snake Rivers, or to meet BiOp flow objectives at Lower Granite or McNary. Project may draft lower than 1520 feet in September, to as low as 1500 feet, to evaluate effects of cool temperature releases on migrating fish as part of an adaptive migration approach.

· **Libby.** The Corps plans to operate Libby Dam in an attempt to meet the sturgeon flow requirements consistent with existing treaties and laws, and will reduce releases if monitoring identifies potential adverse effects of flooding, bank erosion, or dissolved gas levels, and/or the Corps is requested by USFWS to reduce releases. Libby plans to operate to meet bull trout minimum flow objectives in July and August. If, at the conclusion of the operation for sturgeon and bull trout, Lake Koocanusa is above elevation 2439, the Corps may, if necessary, lower Libby Reservoir to elevation 2439 by August 31 to meet salmon flow objectives in the Columbia River.

· **Albeni Falls.** In accordance with the BiOps, the Corps intends to operate Albeni Falls so that elevation of Lake Pend Oreille during the winter varies over the next several years. The purpose of this winter operation is to evaluate kokanee spawning and production, the utilization of kokanee by

bull trout as a food source, and ultimately the survival of listed bull trout. In the winter of 2001-2002, the Corps plans to operate Lake Pend Orielle at elevation 2051 and in the following winter at elevation 2055. By the summer of 2003, USFWS is to recommend to the Corps, based on an independent scientific review, the sequence of winter elevation for future years' evaluation. Summer operation would be within the summer operating range above elevation 2062 at Lake Pend Oreille provided normal and planned conditions continue to exist within the Columbia Basin.

· **Chief Joseph.** The reservoir is maintained from elevation 950 to 956 year round due to bank sloughing concerns below Grand Coulee Dam.

· **Lower Snake River Projects.** The Corps plans to operate Lower Granite, Little Goose, Lower Monumental and Ice Harbor within a one-foot range above Minimum Operating Pool (MOP) from April 3 until adult fall chinook salmon begin entering the lower Snake River as determined by the TMT. In coordination with NMFS, the Corps may operate at different elevations for approved research, flood control, navigation, other requirements or special operations.

· **Lower Columbia River Projects.** The Corps plans to operate Bonneville, The Dalles and McNary Reservoirs in their normal operating range. The Corps will operate John Day down to as low as 257 feet for flood control if

required for downstream protection. The Corps plans to operate John Day within a one-and-a-half foot range above elevation 262.5' from April 20 to September 30 each year without adversely affecting irrigators which means that the irrigation pumps will be able to withdraw water from the reservoir. The pool will be raised if irrigation pumping problems occur.

SPILL

The Corps plans to provide the annual spill program for juvenile fish passage at Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville projects identified in the NMFS 2000 BiOp. This spill program involves voluntary spill which could exceed current states' water quality standards of 110% for total dissolved gas (TDG) based on a risk assessment conducted by NMFS. Annual spill volumes may be adjusted or interrupted due to emergencies, adult passage, navigation, research activities, flood control, other requirements and unanticipated events. The Corps will coordinate and request TDG variances for voluntary spill called for in the NMFS and USFWS 2000 BiOps.

JUVENILE FISH TRANSPORTATION PROGRAM

The Corps plans to transport in accordance with the NMFS 2000 BiOp criteria and existing ESA Section 10 Permit. This includes transportation of

all juvenile fish collected at Lower Granite, Little Goose and Lower Monumental in the spring, and transportation of all juvenile fish collected at the three Snake River projects and McNary in the summer. Based on water conditions and further evaluations, transport from McNary to benefit upper Columbia stocks in the spring may be considered on a case by case basis. The Corps will consider the existing biological information and runoff conditions in making decisions on the amount, location and timing of the overall juvenile transportation program as part of an adaptive migration approach. In low runoff years, the Corps considers this program as one of the options that would increase overall system survival of migrating juvenile salmonids.

FUTURE STUDIES OF OPERATION AND CONFIGURATION MODIFICATIONS

The Corps is continuing to pursue configuration studies of potential system improvements identified in NMFS' and USFWS' 2000 BiOps. Some configuration studies are evaluating structural modifications that could be made to Federal projects on the lower Snake and Columbia rivers to improve juvenile salmon migration. There are also evaluations recommended to examine modifications at the storage projects for bull trout and white sturgeon. The biological opinion also recommends that the Corps conduct several studies of the operation of the FCRPS to address improvements for listed species. The Corps is committed to pursue funding to conduct these

studies. The exact scope and schedule of each study will be dependent upon congressional appropriations, public input, compliance with applicable laws and regulations and other procedural requirements.

HABITAT ACTIONS

The NMFS Biological Opinion calls for the action agencies to take offsite actions to improve habitat for listed salmon and steelhead species. Within its existing authorities and subject to available funding, the Corps plans to implement habitat research, protection, enhancement, and monitoring and evaluation actions in the Columbia River estuary, in the Columbia Basin tributaries and in the mainstem habitats.

HATCHERY ACTIONS

The NMFS Biological Opinion calls for the action agencies to study and make improvements at hatcheries. The Corps, under existing authorities and in coordination with the BPA, Reclamation and the relevant hatchery operators, plans to implement the hatchery actions listed in the NMFS 2000 BiOp. The most immediate action will be enabling the relevant hatchery operators to complete the Hatchery and Genetic Management Plans. These plans will identify the necessary operational and facility improvements.

ADAPTIVE MANAGEMENT FRAMEWORK

The Corps will rely on the required annual and five year implementation plans to identify the anticipated work, changes in schedules and actions, and the supporting biological information. The timing of the Corps to implement actions is dependent upon receiving adequate funding, completing appropriate engineering designs and prototype tests, obtaining favorable test conditions (weather and available fish) and engaging the region on the priority of each action. Appropriate modifications to the actions and/or performance standards will be made as new scientific information is gathered, as activities are prioritized given available funding and as progress is made on biological and engineering designs. The Corps is committed to working with regional entities through a regional forum. Decisions will be based on determinations of ESA compliance made by NMFS and USFWS in response to the Action Agencies implementation plans.

CLEAN WATER ACT

Further, this 2001 ROCASOD is responsive to the order issued on February 16, 2001 by the court in National Wildlife Federation, et al. v. Corps of Engineers, Civ. No. 99-442-FR, (D. Or. 2001). In the court's opinion, Judge Frye ruled that in taking action to comply with its legal obligations

under the Endangered Species Act, the Corps was not free to do so without considering compliance with its legal obligations under the CWA. In response to that directive, the Corps has examined the impact of its project operations on meeting states' TDG and temperature water quality standards and how the Corps will seek to comply with both ESA and CWA.

The NMFS 2000 BiOp calls for voluntary spill to 120% TDG at the Corps lower Snake and Columbia river projects for juvenile fish passage and spill at Dworshak project to augment flows for fish and to moderate water temperatures downstream. USFWS 2000 BiOp requests that the Corps test spill at Libby Dam for purposes of increasing flows for listed sturgeon. These voluntary spill recommendations would exceed states' TDG water quality standard of 110%.

The Corps will seek to harmonize operations to comply with both the ESA recommendations and the applicable states and tribal water quality standards. The Corps is working with Oregon, Washington, Idaho, and Montana, and has proposed a regional, multi-year agreement to accomplish both the ESA goals of survival and recovery of listed species and the TDG and temperature water quality goals of the CWA. The Corps intends to undertake this effort by working with EPA, states and tribes on their Total Maximum Daily Load (TMDL) process.

In the future, subject to available funds and Congressional directives, the Corps is committed to work, in conjunction with the other federal agencies, on implementation of a water quality plan (included as Appendix B of the NMFS 2000 BiOp) for the mainstem Columbia and Snake rivers to address CWA objectives. The geographic scope of this plan is broader than the FCRPS and would include additional actions to improve mainstem water quality by reducing TDG and temperature.

SUMMARY

The Corps has taken into consideration the environmental consequences, the economic costs and the biological data supporting the hydropower operations and project improvements, habitat actions and hatchery reforms discussed in this ROCASOD. The Corps has determined that adequate authority, NEPA documentation, and biological rationale exist to implement certain hydropower operations and investigate future hydropower, habitat and hatchery actions.

The Corps has taken into account the effect of the operations on compliance with State and Tribal water quality standards. The Corps has determined that the actions set forth in the NMFS and USFWS 2000 BiOps are consistent with our legal obligations under the CWA.

The Corps has taken into account the Northwest Treaty Tribes' fishing rights, the United States' trust responsibility to Indian Tribes and its responsibility to act in a manner consistent with the trust responsibility.

The Corps finds that the determinations made in this ROCASOD are sufficient for the Corps to adequately implement the reasonable and prudent alternatives and incidental take statements in the NMFS and USFWS 2000 BiOps. These actions are a coordinated mixture of system operations, configuration measures, habitat restoration and continued monitoring activities which are consistent with the reasonable and prudent alternatives and incidental take statements in the USFWS and NMFS 2000 BiOps.

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RECORD OF CONSULTATION AND STATEMENT OF DECISION

I. INTRODUCTION

This Record of Consultation and Statement of Decision (2001 ROCASOD) is the U.S. Army Corps of Engineers (Corps) response to the recommendations in the Endangered Species Act (ESA) Section 7 Biological Opinion on Effects to Listed Species from Operations of the Federal Columbia River Power System (FCRPS) issued by the U.S. Fish and Wildlife Service (USFWS) on December 20, 2000 (USFWS 2000 BiOp) as amended by letter dated January 25, 2001, and the Biological Opinion issued by National Marine Fisheries Service (NMFS) on December 21, 2000 on the Reinitiation of Consultation on Operation of the Federal Columbia River Power System, Including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation (Reclamation) Projects in the Columbia Basin (NMFS 2000 BiOp). The 2001 ROCASOD addresses the operation of and certain actions at Dworshak, Lower Granite, Little Goose, Lower Monumental, Ice Harbor, Libby, Albeni Falls, Chief Joseph, McNary, John Day, The Dalles and Bonneville projects located in the states of Idaho, Oregon, Montana and Washington. The 2001 ROCASOD also addresses NMFS 2000 BiOp habitat and hatchery actions.

Further, this 2001 ROCASOD is responsive to the order issued on February

16, 2001 by the court in National Wildlife Federation, et al. v. Corps of Engineers, Civ. No. 99-442-FR, (D. Or. 2001). Having found that the administrative record did not establish that the Corps considered all relevant factors in making the 1998 Record of Decision, the court ordered the Corps to issue a new decision to replace the 1998 Record of Decision which addresses compliance with its legal obligations under the Clean Water Act.

This action is taken under authorities and requirements related to the operation of the respective Corps projects involved in the proposed action.

II. BACKGROUND

The Corps projects on the Snake and Columbia Rivers are multiple-use projects, which were authorized for construction, operation and maintenance variously to serve flood control, power production, navigation, recreation, fish and wildlife, irrigation, water quality and municipal and industrial water supply. Over the course of years, since their construction and operation, the various uses of the projects have been adapted to meet the authorized uses and needs of the Pacific Northwest. The Corps projects are operated in a coordinated manner with the Bureau of Reclamation (Reclamation) projects and with certain Canadian reservoir projects pursuant to the Columbia River Treaty between the United States and

Canada.

With the initial listing of some Snake River salmon species under the Endangered Species Act (ESA) in 1991, the Corps' existing programs of structural modification and flow augmentation for the benefit of anadromous fish focused on modifying the structures and operation of the Corps projects to avoid jeopardizing listed species and adversely affecting critical habitat. An ESA consultation history of the last ten years is provided in Attachment A. In the 1995 NMFS Biological Opinion, the Corps was asked to examine options for improving juvenile salmon survival in the lower Snake River to include breaching the four lower Snake River dams (Lower Granite, Little Goose, Lower Monumental and Ice Harbor) by 1999.

In 1999, NMFS listed six additional populations of anadromous fish and USFWS listed one additional resident fish species pursuant to the ESA. In addition, system configuration changes have been made and operation of the FCRPS has been modified relative to that which existed in 1995. Finally, additional information has become available since 1995 concerning the species covered by NMFS's and USFWS's 1995 and 1998 opinions. The Action Agencies (Corps, Reclamation and Bonneville Power Administration (BPA)) reinitiated consultation and prepared a Multi-Species Biological Assessment of the Federal Columbia Power System (1999 Multi-species BA), including a status of its examination of alternatives for the lower

Snake River dams, and submitted it to NMFS and USFWS on December 21, 1999. The 1999 Multi-species BA proposed operations that had been developed as part of the 1995 BiOps and the supplemental BiOps issued thereafter. It also proposed a conceptual framework that would establish performance measures for the dam and reservoir projects, prioritize actions, measure results and experimentally manage to help resolve key uncertainties.

A Biological Opinion on Effects to Listed Species from Operations of the Federal Columbia River Power System was issued by the US Fish and Wildlife Service on December 20, 2000. The Biological Opinion was issued by National Marine Fisheries Service on December 21, 2000 on the Reinitiation of Consultation on Operation of the Federal Columbia Power System, Including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation Projects in the Columbia Basin. By letter dated January 25, 2001, USFWS amended its opinion to correct some editorial mistakes and omission of an analysis of anticipated take and some terms and conditions.

Critical habitat has been designated for twelve anadromous species and the NMFS 2000 BiOp concluded that the actions detailed in the Reasonable and Prudent Alternative did not destroy or adversely modify designated critical habitat for all listed anadromous species. Critical habitat has not been

designated for the Kootenai River white sturgeon and bull trout and therefore USFWS did not analyze critical habitat in the USFWS 2000 BiOp.

This 2001 ROCASOD is the Corps notification to the NMFS and USFWS of its decision on the actions in the biological opinions per 50 CFR Part 402.15.

Along with the completion of the BiOps, a Basinwide Salmon Recovery Strategy was developed by several federal agencies including the Corps. It is a comprehensive, long-term strategy to restore threatened and endangered salmon and steelhead throughout the Columbia-Snake River Basin of the Pacific Northwest. This strategy outlines specific actions to be taken by the federal government, and proposes additional actions for tribal, state and local governments, which together will prevent extinction of 12 anadromous fish species and lead to their ultimate recovery, and considering other listed species such as bull trout and sturgeon. Its biological goals are to halt the decline in salmon populations within five to ten years, and establish increasing trends in abundance within 25 years. The Corps supports the goals of the strategy. In implementing the BiOps, the Corps will contribute to attainment of these goals.

III. SPECIES

Species addressed in the NMFS 2000 BiOp and USFWS 2000 BiOp and their status is shown in Table 1.

Table 1. **Species Considered under the Biological Opinions**

Species		
Anadromous Fish (NMFS oversight species):		
Snake River Sockeye Salmon		
Snake River Spring/Summer Chinook Salmon		
Snake River Fall Chinook Salmon		
Snake River Steelhead		
Upper Columbia River Spring Chinook Salmon		
Upper Columbia River Steelhead		
Middle Columbia River Steelhead		
Lower Columbia River Chinook Salmon		
Lower Columbia River Steelhead		
Columbia River Chum Salmon		
Upper Willamette River Chinook Salmon		
Upper Willamette River Steelhead		
Resident Fish, Wildlife, and Plants (USFWS oversight species):		

Bull Trout
Kootenai River White Sturgeon
Westslope Cutthroat Trout
Bald Eagle
Grizzly Bear
Gray Wolf
Woodland caribou
Northern Idaho ground squirrel
Canada Lynx
Mcfarlane's four o'clock
Water howellia
Ute's ladies tresses
Spalding's silene

1/ T = listed under the ESA as threatened E = listed under the ESA as endangered

IV. PROJECTS

The dam and reservoir projects that are included as part of the Federal Columbia River Power System (FCRPS) are Dworshak, Lower Granite, Little Goose, Lower Monumental, Ice Harbor, Libby, Albeni Falls, Chief Joseph, McNary, John Day, The Dalles and Bonneville projects operated by the Corps and Grand Coulee and Hungry Horse projects operated by

Reclamation. The BPA is the Federal Power Marketing agency for hydroelectric power generated at these projects and it is also responsible for the transmission of this energy.

Congress authorized the construction, operation, and maintenance of the Corps hydropower projects in accordance with various statutes (See Table B-1). The Corps FCRPS projects are multiple-use projects, authorized for flood control, hydropower generation, navigation, recreation, fish and wildlife, irrigation, water quality, and water supply, on the Columbia-Snake River system, a very complex and heavily utilized resource.

The location of these projects is shown on Figure 1. A discussion of the project uses and pertinent information is included as Attachment B, Project Uses.

V. BIOLOGICAL OPINIONS

After submitting the 1999 Multi-species BA, the Corps and other Action Agencies consulted with NMFS and USFWS. In some cases, the proposed action was modified by the Action Agencies to improve conditions for listed species. The Action Agencies also worked with the Services to develop Reasonable and Prudent Alternatives (RPA), Incidental Take Statements and Conservation Recommendations.

The Corps concurs with NMFS's determination that the integrated operation of the FCRPS by the three action agencies, in a manner consistent with the NMFS 2000 BiOp, and as further described below, will avoid jeopardy to listed anadromous fish stocks and will ensure the survival and recovery of the listed species. The Corps also concurs with USFWS determination that the integrated operation of the FCRPS by the three action agencies, in a manner consistent with the USFWS 2000 BiOp, and as further described in below, will avoid jeopardy to listed Kootenai River white sturgeon and bull trout and will ensure the survival and recovery of the listed species. The Corps also concurs that the operation of the FCRPS would not likely adversely affect the other listed species under USFWS jurisdiction identified in Table 1.

In concurring with the BiOps' conclusions, the Corps also reserves the discretion to implement different actions than those identified in the BiOps with the intent that the alternative measures result in achieving the performance standards as identified in the BiOps and/or as modified through the Action Agencies' submittal of the one and five year implementation plans. In addition, there are actions, in the Corps view, that are discretionary in that they are extraneous to those necessary to avoid jeopardizing the listed species. For instance, the creation and utilization of regional forums are an appropriate coordination mechanism,

but are not actions which would by themselves improve survival and therefore avoid jeopardizing listed species.

Figure 1. Map of the Columbia River Basin including the 14 primary dams that make-up the Federal Columbia River Power System (FCRPS)

The one and five year planning process is to refine, implement, evaluate and adjust ongoing efforts critical to achieving the performance standards. The plans will cover all operations, configuration, research, monitoring and evaluation actions as well as the habitat, hatchery and harvest actions taken by the Action Agencies.

VI. ENVIRONMENTAL DOCUMENTATION

The Corps has considered the effects of certain operations of the FCRPS recommended in the Biological Opinions. These operations include dam and reservoir operations, spill and juvenile fish transportation program that could be implemented starting in 2001. In addition, there are other actions in the BiOps which will require additional environmental compliance prior to implementation. Such actions include system flood control changes, implementation of an alternative flood control operation in the upper Columbia Basin referred to as VARQ, Lower Snake River Juvenile Salmon Migration Feasibility Study, habitat actions, and other potential changes to the operation and configuration of the FCRPS. Summaries of certain laws pertaining to the actions being implemented are provided below. Attachment C, Environmental Documentation, is a more detailed discussion of the Federal laws, regulations and orders that are potentially applicable to these near-term operations identified in the NMFS 2000 BiOp and the

USFWS 2000 BiOp.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

The Corps has evaluated the effects of the certain operational actions to be implemented utilizing past NEPA documents. These NEPA documents include prior project and system Environmental Impact Statements (EIS) of which the last was the System Operation Review EIS (SOR EIS) completed with the issuance of a Record of Decision in 1997. Since that time several new species have been listed and there have been modifications to the operations. The Corps has reviewed the biological requirements of the species listed since 1997 and the changes in the operations. The Corps believes that the effects are within the range of the analysis conducted in the SOR EIS. These effects include improved survival of listed salmonids, bull trout and white sturgeon; reduction in hydropower generation; decrease in recreational opportunities; resident fish and wildlife impacts; increase in total dissolved gas levels; and additional exposure of cultural resources at certain projects. Except for studies of certain future operations and structural modifications of the projects, the Corps has determined that the effects of the operations to be within the analysis contained in the existing NEPA documentation.

NATIONAL HISTORIC PRESERVATION ACT / NATIVE AMERICAN

GRAVES PROTECTION AND REPATRIATION ACT

As part of the SOR EIS, an evaluation was conducted on the known and potential effects of system operations changes on historic properties pursuant to the National Historic Preservation Act (NHPA), as amended. Consultation occurred with the State Historic Preservation Officers (SHPOs) in the states of Oregon, Idaho, Montana, and Washington. Consultation also occurred with the Advisory Council on Historic Preservation (ACHP) and with the thirteen interested and affected tribes. As an outcome of that process the Corps established Reservoir Cooperating Groups to collectively evaluate the needs and priorities for historic properties inventories, evaluations, and site preservation. These Reservoir Cooperating Groups consist of representatives from the Corps, interested and affected tribes, other state and federal agencies, and any other interested parties. There are currently five Reservoir Cooperating Groups; three of which focus on individual reservoir projects, and two of which focus on multiple reservoir projects. These same Reservoir Cooperating Groups also address the requirements of the Native American Graves Protection and Repatriation Act (NAGPRA) following the procedures described in the Department of Interior implementing regulations for the appropriate repatriation/disposition of Native American remains and objects specified by the Act.

CLEAN WATER ACT

In the court's opinion, dated February 16, 2001 (National Wildlife Federation, et al. v. U.S. Army Corps of Engineers, Civ. # 99-442-FR (D.Or. 2001)) Judge Frye ruled that in taking action to comply with its legal obligations under the Endangered Species Act, the Corps was not free to do so without considering compliance with its legal obligations under the CWA. In response to that directive, the Corps has examined the impact of its project operations on meeting states' total dissolved gas (TDG) and temperature water quality standards and how the Corps will seek to comply with both ESA and those water quality standards.

By letter dated September 29, 2000 from Charles E. Findley, EPA Region 10 Acting Administrator to Donna Darm, Acting Regional Administrator, National Marine Fisheries Service, Northwest Region, EPA opined that all Federal agencies must commit to working towards attainment of Clean Water Act state and tribal water quality standards in the Columbia and Snake Rivers. EPA called for meaningful progress toward water quality standard attainment in order to insure long term recovery and sustainability of endangered fish. The Corps of Engineers intends to undertake the steps described in Attachment D, Studies, under the Water Quality Plan (including a Project Management Plan), to accomplish that goal.

In developing the Biological Opinions, NMFS and USFWS, in coordination with EPA, the Corps, Reclamation, and BPA, considered respective ecological objectives of the ESA and the CWA. In many instances, actions implemented for the conservation of ESA listed species will also move toward attainment of water quality standards (e.g. reducing TDG and temperature). But, at the present time, the Corps also knows that actions implemented for the conservation of ESA listed species may exceed the states' and tribal water quality standards.

The NMFS RPA calls for voluntary spill for fish passage to 120% TDG. The Corps is asked to spill for this purpose on the four lower Snake River projects, located in Washington, and the four lower Columbia River projects, located in Oregon and Washington. Both Oregon and Washington's water quality standard for TDG is 110%. The NMFS RPA identifies spill to 120% from the Corps Dworshak project, located in Idaho, to augment flows for fish and to moderate water temperatures downstream. Idaho's water quality standard for TDG is 110%. USFWS 2000 BiOp requests that the Corps test spill at Libby, located in Montana, for purposes of increasing flows for listed sturgeon. Montana's water quality standard for TDG is 110%. NMFS's RPA also has installation of flow deflectors at Chief Joseph to shift system involuntary spill from other projects to Chief Joseph, located in Washington. Consequently, without taking additional actions, meeting the

biological opinion RPA that calls for voluntary spill of up to 120% at federal projects in support of fish passage is in conflict with the TDG state standard of 110% for purposes of the CWA. It is the intent of the Corps to reconcile these conflicting objectives over time in coordination with appropriate federal, state, and tribal agencies.

The Corps will seek to harmonize operations to comply with both the ESA recommendations (determined by the NMFS and USFWS), and the applicable water quality standards. In order to comply with the NMFS RPA and USFWS' Incidental Take Statement regarding voluntary spill, which would cause the exceedance of existing states' TDG standards, the Corps is working with Oregon, Washington, Idaho, and Montana, and has proposed a regional, multi-year agreement to accomplish both the ESA goals of survival and recovery of listed species and the TDG and temperature water quality goals of the CWA. The Corps intends to undertake this effort by working with EPA and the states on their Total Maximum Daily Load (TMDL) process. The Corps will also work with tribal governments to reach the same end. Until an agreement is in effect, the Corps will coordinate and request TDG variances for voluntary spill called for in the NMFS and USFWS 2000 BiOps. The Corps will also explore all practicable steps, subject to Congressional appropriations and directives, to lower and hopefully eliminate, any resulting exceedances should states' and tribal variances not be granted.

In the future, the Corps intends to work with other federal agencies on the development of a water quality plan (included as Appendix B of the NMFS 2000 BiOp) for the mainstem Columbia and Snake rivers to address CWA objectives. The geographic scope of this plan is broader than the FCRPS and would include additional actions to improve mainstem water quality by reducing TDG and temperature. The Corps anticipates that some of these actions must and will be undertaken by entities other than the Federal Action Agencies. The plan would work through an adaptive management process and through the TMDL implementation process to accomplish the following:

- Define and evaluate specific water quality problems (systemwide and project specific), and develop a plan of action to solve or reduce these problems.
- Make operational and capital investment decisions at the Federal projects to reduce levels of total dissolved gas generated by spill and to reduce the reliance on spill as one of the primary means of assisting juvenile fish passage.
- Implement and report on adequate physical, biological, and chemical (with a priority on TDG and temperature) monitoring to assess compliance with state and Tribal water quality standards and other special conditions that may apply.

· Implement modeling as part of the BiOp process and the TMDL process to better assess and act on water quality issues of TDG and water temperature.

Subject to available funds and Congressional directives, the Corps is committed to implementing Appendix B of the NMFS 2000 BiOp. The Corps will do so by working with the Federal Action Agencies to develop and implement this water quality plan and undertaking all practicable alternatives to move closer to CWA standards. Further discussion of the development of a water quality plan is shown in Attachment D, Studies.

The Corps believes a critical component to the achievement of water quality standards is the establishment of clear, implementable TMDLs for all users of the Columbia River and Snake River system who contribute to the non-attainment of those limits. The four basin states have not yet established TMDLs for TDG and water temperature. Now that they and EPA have started work on that effort, the Corps is committed to working with the states and EPA to develop the TMDLs. The TDG and temperature water quality information the Corps has, or develops in the future as part of the Water Quality Plan or other studies, will be provided to EPA, the states, and appropriate tribes. When the states and EPA develop additional information, including TMDLs for the Columbia River Basin, the Corps will be able to determine what actions it may take consistent with those water

quality parameters and congressional appropriations and directives. Until that time, the Corps, as it has in the past, will provide information on water quality at its dam and reservoir projects covered by the 2000 Biological Opinions in order to assist the four Northwest states, tribes and EPA in their TMDL process. The Corps will seek variances where operations recommended by the BiOps for voluntary spill for fish passage result in exceedence of states' and tribal water quality standards.

A more detailed discussion of Clean Water Act considerations is set forth in the section labeled "Clean Water Act" in Attachment C, Environmental Documentation.

ENDANGERED SPECIES ACT

There may be individual actions attendant to implementation of individual RPAs, and which have not been consulted on (such as construction of a structural improvement which requires activities not previously considered which may have an effect on listed species). In that case consultation on that particular activity may be needed before full implementation of the BiOp activity can proceed.

OTHER LAWS AND REGULATIONS

There are other laws and regulations that the Corps is responsible to consider in making decisions on the actions contained in the NMFS and USFWS 2000 BiOps. Such laws and regulations include Clean Air Act, Fish and Wildlife Coordination Act, Pacific Northwest Electric Power Planning and Conservation Act, Executive Orders and CEQ Memorandum, Corps regulations and other Federal, state and local plans and laws. The Corps has evaluated the hydropower operations described below and has considered the effects of those actions in regard to any standards or requirements set forth in these laws and regulations in making decisions in this 2001 ROCASOD.

VII. HYDROPOWER

Many of the actions in the biological opinions regarding hydropower include dam and reservoir operations (flow management, spill, and juvenile transportation) which can be implemented near-term. There are also studies of structural modifications and changes in the operation of the FCRPS projects. Each is discussed below.

DAM AND RESERVOIR OPERATIONS

The Corps prepares an annual Water Management Plan which covers relevant factors affecting the operation of FCRPS, including federal reservoir

and dam operations to augment flows for fish, power generation, turbine outage and spill scheduling; water temperature management control; total dissolved gas (TDG) management, and special operation for research and other purposes. The Plan is updated annually by April 15th of each year by the Technical Management Team (TMT). The Corps' in-season decisions on shaping (timing and amount) of water releases (flow augmentation, spill, etc.) during the migration and fish passage season, and juvenile fish transportation program are made after considering recommendations of the TMT. The TMT includes federal, state and tribal representatives who meet throughout the year to monitor and evaluate the shaping of available water based on real time flow and biological information during the fish passage season. The TMT makes recommendations on water management and system operations to the Actions Agencies, which include the Corps, Reclamation and BPA. In coordination with NMFS and USFWS, the Corps may adopt a different operation, including an operation for flood control, approved research, emergencies, to meet other requirements or operations for other project uses. Unless the Corps determines that alternative operations should be implemented, the Corps plans to operate as discussed below to implement the Biological Opinions.

The Corps will operate projects and fish passage facilities in accordance with criteria stated in the Corps' Fish Passage Plan (FPP), to provide safe, efficient passage for anadromous fish species listed under ESA, as well as

other migratory fish species. The FPP addresses year-round project operations, and describes the procedures and criteria to be used when there are emergency deviations from the FPP. The Fish Passage O&M Coordination Team (FPOM) coordinates the implementation of the FPP. This includes development or changes to fishway operating criteria, main unit operating priority, coordination of special operations that must be implemented during the fish passage season and how to best operate the facilities when some component fails or must be taken out of service during the fish passage season. The Corps provides opportunity for annual review of the FPP by NMFS, other federal and state agencies, and tribes. Agreed to revisions will be made to subsequent years' Fish Passage Plans.

Flow Objectives

The Corps will coordinate the operation of its projects with the other Action Agencies in an attempt to meet the following objectives:

· For the listed salmon and steelhead, the seasonal average flow objectives range from 85 to 100 kcfs from April 3 to June 20 and 50 to 55 kcfs from June 21 to August 31 in the lower Snake River, measured at Lower Granite, and 220 to 260 kcfs from April 20 to June 30 and 200 kcfs from July 1 to August 31 in the lower Columbia River measured at McNary. The flow objective in any year would be determined using a

sliding scale based on forecasted runoff as specified in the NMFS 2000 BiOp.

· For the Upper Columbia steelhead, the seasonal average flow objective is 135 kcfs from April 10 to June 30 measured at Priest Rapids Dam.

· For the chum salmon, the flow objective is to provide certain water surface elevation in the Ives Island area below Bonneville Dam. This is generally described as providing a minimum of 125 kcfs from November 1 through April 10, the start of spring flow augmentation. NMFS recognizes that this flow objective cannot be met in every year and must be considered with the requirements for other listed species. The Corps will examine reservoir storage, baseflows and predicted hydrologic conditions, and utilize input by the TMT in making decisions to provide for chum spawning.

· For the Kootenai River white sturgeon, the Corps proposed in a letter to the USFWS dated December 19, 2000, a specific volume of water be identified for sturgeon flows that could be shaped in-season within existing project requirements. The volume increased based on runoff forecast. The USFWS 2000 BiOp contains the specific volumes. The Corps will work with USFWS to better clarify yearly operations for sturgeon and refine the volume through the annual planning process.

Dworshak Operation

The Corps plans to maintain a minimum discharge, approximately 1.3 – 1.5 kcfs, at Dworshak once the reservoir is evacuated to the interim draft level, or from September through April to enhance the probability of being on the flood control rule curve by April, unless higher discharges (up to 25 kcfs) are required to stay on the flood control rule curve, for emergencies, or to provide flows for listed chum below Bonneville Dam. The Corps plans to operate Dworshak Reservoir to be no higher than a 1,558 -foot maximum elevation on December 15 (winter flood control maximum elevation). The minimum discharge will be adjusted as needed to assure that total dissolved gas saturation not exceed 110% to the maximum extent possible. Between April and June, the Corps may draft the project if needed for flood control, refill by June 30 or provide spring flow augmentation as coordinated with TMT. Dworshak may be drafted as low as elevation 1520 by August 31 to provide flow augmentation and temperature moderation in the lower Clearwater and Snake Rivers, or to meet BiOp flow objectives at Lower Granite or McNary. Project may draft lower than 1520 feet in September, to as low as 1500 feet, to evaluate effects of cool temperature releases on migrating fish as part of an adaptive migration approach.

Libby Operation

The Corps plans to operate Libby Dam during fall and winter on minimum project releases to enhance the probability of being on upper rule curve by April 10 except for releases to meet flood control, International Joint Commission requirements at Kootenay Lake, for emergencies or to provide flows for listed chum below Bonneville. The Corps plans to operate Libby Dam in an attempt to meet the sturgeon flow requirements consistent with existing treaties and laws, and will reduce releases if monitoring identifies potential adverse effects of flooding, bank erosion, or dissolved gas levels, and/or the Corps is requested by USFWS to reduce releases. Libby plans to operate to meet bull trout minimum flow objectives in July and August. If, at the conclusion of the operation for sturgeon and bull trout, Lake Koocanusa is above elevation 2439, the Corps may, if necessary, lower Libby Reservoir to elevation 2439 by August 31 to meet salmon flow objectives in the Columbia River.

Albeni Falls Operation

The Corps plans to operate Albeni Falls during fall and winter in an attempt to meet a 90 percent level of confidence of being at the April 15 flood control elevation while meeting the project and system minimum flow and flood control requirements. In accordance with the BiOps, the Corps intends to operate Albeni Falls so that elevation of Lake Pend Oreille during

the winter varies over the next several years. The purpose of this winter operation is to evaluate kokanee spawning and production, the utilization of kokanee by bull trout as a food source, and ultimately the survival of listed bull trout. In the winter of 2001-2002, the Corps plans to operate Lake Pend Orielle at elevation 2051 and in the following winter at elevation 2055. By the summer of 2003, USFWS is to recommend to the Corps, based on an independent scientific review, the sequence of winter elevation for future years' evaluation. Summer operation would be within the summer operating range above elevation 2062 at Lake Pend Oreille provided normal and planned conditions continue to exist within the Columbia Basin.

Chief Joseph Operations

The reservoir is maintained from elevation 950 to 956 year round due to bank sloughing concerns below Grand Coulee Dam. The reservoir is not drawn down below 950 to protect nesting Canada geese and other wildlife populations, including bald eagles. The reservoir may be drawn down below 950 (to 930) for maintenance purposes, with agency approval after a two-week notice.

Lower Snake River Projects

The Corps plans to operate Lower Granite, Little Goose, Lower Monumental

and Ice Harbor within a one-foot range above Minimum Operating Pool (MOP) from April 3 until adult fall Chinook salmon begin entering the lower Snake River as determined by the TMT. Lower Granite would be filled after November 15 and all four lower Snake projects would be operated within their normal operating range for the remainder of the water year. In coordination with NMFS, the Corps may operate at different elevations for approved research, flood control, navigation, other requirements or special operations.

Lower Columbia River Projects

The Corps plans to operate Bonneville, The Dalles and McNary Reservoirs in their normal operating range. The Corps will operate John Day down to as low as 257 feet for flood control if required for downstream protection. The Corps makes every attempt to operate John Day to assist the irrigators; however, if needed for flood control, the Corps may change the operation in order to meet flood control requirements. The Corps plans to operate John Day within a one-and-a-half foot range above elevation 262.5', which should not significantly impact irrigation, from April 20 to September 30 each year. Operation near elevation 262.5 feet at John Day will be maintained as long as possible without adversely affecting irrigators which means that the irrigation pumps will be able to withdraw water from the

reservoir. The pool may be raised if irrigation pumping problems occur. During fall and winter, the Corps plans to operate all four lower Columbia River projects within their normal operating range.

Flood Control Transfer

Flood control transfers is one option that increases the amount of water available in the Snake River for flow augmentation in the April period by shifting the system flood control space from the Snake River basin to the Columbia River system. The Corps is prepared to temporarily shift Dworshak system flood control requirements starting with the initial April-to-July volume forecast prepared on January 1, if the April forecast predicts runoff at Dworshak of 3.2 MAF or less and if space is available at Grand Coulee and Reclamation will accept the shift. The flood control space will be returned to what it would have been otherwise at both Grand Coulee and Dworshak by April 30. The Corps will compute the ability to transfer system flood control requirements from Brownlee to Grand Coulee, subject to the availability of space at Grand Coulee and the acceptance of the shift by Reclamation. NMFS will need to coordinate a proposal for the shift that is acceptable to Idaho Power Company and the action agencies. The flood control storage that may be shifted from Brownlee to Grand Coulee will be returned to achieve what it would have been otherwise by April 30.

Spill

The Corps plans to provide the annual spill program for juvenile fish passage at Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, John Day, The Dalles and Bonneville projects identified in the NMFS 2000 BiOp. This spill program involves voluntary spill which could exceed current states' water quality standards of 110% for total dissolved gas (TDG) based on a risk assessment conducted by NMFS. The assessment evaluated the risk of higher 120% TDG levels on juvenile and adult salmon compared to juvenile survival of different passage routes pass the dams. NMFS concluded that, at this time, the risk associated with higher TDG was acceptable assuming there is an estimated increase in juvenile survival with the higher spill levels. At Lower Monumental, the Corps is currently conducting a comprehensive evaluation of the deteriorating condition of the stilling basin and the implications to dam safety of both voluntary and involuntary spill. The conclusions of the Corps, based on that evaluation, could preclude voluntary spill until the stilling basin is repaired. The Corps is working diligently to ensure repairs are made at the earliest possible date. Spring spill levels at collector projects (Lower Granite, Little Goose and Lower Monumental) are adjusted based on estimated average seasonal flows at Lower Granite. Collector projects are those with facilities for collecting migrating listed species and transporting them by barge or truck to below Bonneville Dam. Annual spill volumes may be adjusted or interrupted due

to emergencies, adult passage, navigation, research activities, flood control, other requirements and unanticipated events. The Corps Fish Passage Plan identifies the estimated volumes of spill at each project, the estimated TDG levels and criteria to be used to make adjustments in-season. The Fish Passage Plan is reviewed and updated annually.

For the 2001 migration season, the following summarizes the actions taken with each state to provide for voluntary fish passage spill in the mainstem Columbia and Snake rivers and spill at storage projects in order to attempt to meet flow objectives. The State of Washington adopted changes in 1997 to the Surface Water Quality Standards (Chapter 173-201AWAC) to allow spill for fish passage until the year 2003. A variance from the State of Oregon for the 2001 fish passage spill was issued on March 30, 2001. The State of Idaho and the Nez Perce Tribe jointly sent a letter dated February 15, 2001, identifying conditions for a short term activity exemption. Several of the conditions are contrary to the NMFS 2000 BiOp recommendations on Dworshak operations and other conditions may not be physically achievable in the forecasted low runoff year in 2001. At this time, there are no plans to spill at Libby project in Montana in 2001; therefore no variances were requested.

The Corps recognizes the interim reliance on fish passage spill to achieve survival levels would result in exceedances of current states' water quality

standards. The Corps is also being asked to voluntarily spill at Libby and Dworshak to meet flow objectives for listed sturgeon and salmon respectively. The Corps proposes a regional, multi-year agreement with the States of Oregon, Idaho, Montana and Washington to accomplish the goals of survival and recovery of the listed stocks and to accomplish the water quality goals of the Clean Water Act (CWA). This agreement would define the steps and timetable to develop a long term basin-wide water quality plan. (This plan is further described in Attachment D) . It would also address how to accomplish the NMFS and USFWS biological measures of spilling to 120% TDG supported by the current monitoring and reporting program and would replace the annual process of requesting variances. In the absence of a multi-year agreement, the Corps would coordinate and request a variance for ESA related fish passage spill.

Requests for voluntary spill for non-ESA reasons which would exceed applicable state water quality standards may be considered, but the Corps requires the requesting entity to coordinate with the appropriate state and/or tribal agencies in such cases.

While it is the Corps' spill management goal to minimize operations that cause high levels of TDG, it is difficult to manage to an exact level with all of the variables in the system (for example, the volume of water in the river, the operation of powerhouse units, water temperature, wind, etc.).

The Corps will continue to monitor the TDG levels and may make spill volume adjustments in an effort to provide more favorable passage conditions for the listed juvenile and adult Snake River salmon species. These adjustments (i.e. spill reductions) may occur if evidence of gas bubble disease is observed in fish, or if excessive dissolved gas levels occur.

The Corps will continue to review information from ongoing spill studies (e.g. The Dalles spillway efficiency and survival tests) and alternative juvenile bypass measures, and make revisions, if necessary, to the spill program to improve juvenile passage survival and meet CWA objectives.

Juvenile Fish Transportation Program

The Corps plans to transport in accordance with the NMFS 2000 BiOp criteria and existing ESA Section 10 Permit. This includes transportation of all juvenile fish collected at Lower Granite, Little Goose and Lower Monumental in the spring, and transportation of all juvenile fish collected at the three Snake River projects and McNary in the summer. Based on water conditions and further evaluations, transport from McNary to benefit upper Columbia stocks in the spring may be considered on a case by case basis. As a general policy matter, the Corps is prepared to look at extending the period of barging in the summer, however at this time, the Corps is not aware of any data to suggest any survival difference between barging and

trucking juvenile salmon based on NMFS research. The Corps will consider the existing biological information and runoff conditions in making decisions on the amount, location and timing of the overall juvenile transportation program as part of an adaptive migration approach. In low runoff years, the Corps considers this program as one of the options that would increase overall system survival of migrating juvenile salmonids. The Corps will continue to review information from ongoing transport studies and make revisions, if necessary, to the transportation program through the 1- and 5-year Implementation Planning process contained in the NMFS 2000 BiOp. A description of the Implementation Planning process is in Section X, Adaptive Management Framework.

FUTURE PROJECT STRUCTURAL MODIFICATIONS

The Corps is continuing to pursue configuration studies of potential system improvements identified in NMFS' and USFWS' 2000 BiOps. Some configuration studies are evaluating structural modifications that could be made to Federal projects on the lower Snake and Columbia rivers to improve juvenile salmon migration. A critical component of these studies is to look at measures that could potentially reduce reliance on spill up to 120% TDG as the primary passage route for juvenile passage. There are also evaluations recommended to examine modifications at the storage projects for bull trout and white sturgeon. The Corps will continue to work through

the System Configuration Team, the Implementation Team and other regional forums such as the Corps Fish Facility Design and Review Workgroup on implementing these studies and other system improvements with the funds appropriated by Congress. These forums are described in Section XIII. The Corps will consider recommendations by the region on study and implementation priorities, and as appropriate, make modifications to the schedules through the 1- and 5-year planning process. Several of the studies of project structural modifications are summarized in Attachment D.

FUTURE OPERATIONAL CHANGES

The biological opinion recommends that the Corps conduct several studies of the operation of the FCRPS and each project facilities to address improvements for listed species. Attachment D discusses several of these studies. The Corps is committed to pursue funding to conduct these studies. The exact scope and schedule of each study will be dependent upon congressional appropriations, public input, compliance with applicable laws and regulations and other procedural requirements.

VIII. HABITAT

The NMFS Biological Opinion calls for the action agencies to take offsite

actions to improve habitat for listed salmon and steelhead species.

Within its existing authorities and subject to available funding, the Corps plans to implement habitat research, protection, enhancement, and monitoring and evaluation actions in the Columbia River estuary, in the Columbia Basin tributaries and in the mainstem habitats. These authorities currently include Section 582 of the 1999 Water Resources and Development Act; Section 1135 and Section 206 projects for ecosystem restoration actions under the Continuing Authorities Program; and authority for ecosystem restoration actions in the estuary in Section 536 of the 2000 Water Resources and Development Act. The Corps will explore use of authority under the Lower Snake River Fish and Wildlife Compensation Plan for certain habitat activities. Recognizing that many of these authorities require cost-sharing by willing partners, the Corps will make all reasonable efforts to identify and work with potential partners to leverage technical capabilities and funding resources.

In coordination with the BPA, Reclamation, NMFS, other federal, state and tribal agencies and non-governmental agencies, the Corps plans to implement near term habitat protection and enhancement projects with clear benefits for listed fish; evaluate existing habitat and salmonid use of habitats especially in the estuary where more information is needed; plan for long-term habitat protection and enhancement actions; and institute

monitoring and evaluation to determine effectiveness of actions and to inform further planning and actions. The Corps will work with NMFS and others to identify and carry out research needs with a reasonable, planned and focused approach.

Activities in the lower Columbia River estuary will be coordinated with the Lower Columbia River Estuary Plan (LCREP) that includes participation by states, tribes and non-governmental organizations. The Corps has been and continues to be a participating member of LCREP. The Corps will also coordinate with and where possible participate in the Northwest Power Planning Council subbasin assessment and planning efforts.

The Corps recognizes that there will likely be a unique blend of necessary actions as well as an array of relevant authorities and participating entities involved in habitat activities depending on the location and timing of the action. The Corps will use the the 1- and 5-year Implementation Plan to consider habitat actions in three sectors (the tributaries, estuary and mainstem). The Implementation Plan proposes development of physical and biological standards in each of the three sectors. It also recognizes that the achievement of these standards, once they are developed, will be dependent not only on the efforts of the Corps and other Action Agencies, but other participating entities. Until such standards are developed and applied, the emphasis will necessarily be on the specific management actions taken in

each of the habitat zones.

IX. HATCHERIES

The Corps, under existing authorities and in coordination with the BPA, Reclamation and the relevant hatchery operators, plans to implement the four hatchery actions listed in the NMFS 2000 BiOp. The most immediate action will be enabling the relevant hatchery operators, through appropriate funding channels, to complete the Hatchery and Genetic Management Plans (HGMP). The first priority will be the hatcheries in the upper Columbia/Snake river basins, with lower river hatcheries completed next. Following completion and approval by the Services of the HGMP, the Corps will implement the no cost applicable reforms identified in the approved HGMP for the hatcheries funded by the Corps plus those reforms that can be implemented within existing hatchery funding. For those reforms requiring new funding, the Corps will seek additional funding through appropriate channels, where appropriate.

It is the Corps understanding that the current BPA's direct funded fish and wildlife program (the Northwest Power Planning Council's Fish and Wildlife Program) is funding a number of studies that directly address and satisfy the actions in the NMFS 2000 BiOp identifying informational needs. If, in the determination by the Services, these studies do not adequately address

these two information needs, the Corps will seek funding to implement the necessary studies to satisfy the intent of those BiOp actions for the programs the Corps funds.

X. ADAPTIVE MANAGEMENT FRAMEWORK

The adaptive management approach fundamentally recognizes the flexibility required in operating the FCRPS, installing and constructing facilities, undertaking actions in the habitat and hatcheries, and completing complex biological and engineering studies.

Cornerstone to the adaptive management process is the establishment and annual review of performance standards. The Corps will evaluate its actions through the one and five year planning process to determine the progress being made toward the performance standards. The three, five and eight year checkins identified in the NMFS 2000 BiOp will provide the Corps, the other Action Agencies, NMFS, USFWS and the region with a periodic review of the performance standards as well as the current status of survival improvements.

The Corps must consider a variety of factors as we implement the measures in the NMFS and USFWS 2000 BiOps. Unforeseen project requirements, changes in runoff conditions, and other non-planned actions do occur.

Research results will assist in resolving critical uncertainties. In these instances, the Corps will continue to look for opportunities to provide the best available conditions for the listed species. However, the Corps is not planning, as a matter of course or policy, to formulate offsetting actions or mitigation, but the Corps will exercise its discretion to implement adaptive management actions.

The Corps will rely on the required annual and 5 year plans to identify the anticipated work, changes in schedules and actions, and the supporting biological information. The timing of the Corps to implement actions is dependent upon receiving adequate funding, completing appropriate engineering designs and prototype tests, obtaining favorable test conditions (weather and available fish) and engaging the region on the priority of each action. For instance, the level of funding from Congressional appropriations for construction general activities or from the BPA for certain operations and maintenance activities is uncertain from year to year. Appropriate modifications to the actions and/or performance standards would be made as new scientific information is gathered, as activities are prioritized given available funding and as progress is made on biological and engineering designs. The Corps is committed to working with regional entities through a regional forum. Decisions will be based on determinations of ESA compliance made by NMFS and USFWS in response to the Action Agencies 1- and 5-year plans.

The Corps may reinitiate Section 7 consultation if NMFS and/or USFWS make a determination through the annual planning process or at the check-in milestones that there is not timely or sufficient progress to avoid jeopardizing listed species, or the status of one or more of the listed species has changed materially for the worse. Consultation must be reinitiated if the amount or extent of taking specified in the incidental take statement is exceeded, or is expected to be exceeded; if new information reveals effects of the action may affect listed species in a way not previously considered; if the action is modified in a way that causes an effect on listed species that was not previously considered; or if a new species is listed or critical habitat is designated that may be affected by the action. The Corps may also reinitiate based on new scientific information or after making a determination that the conditions have changed from the assumptions and judgment used during the current consultation.

The Corps is also committed to perform research, monitoring and evaluation (RM&E) to resolve uncertainties and evaluate the effects of actions within the scientific framework and provide the basis for evaluation and adaptive management.

XI. CONSIDERATIONS AFFECTING DECISIONS AND IMPLEMENTATION

The following factors are some of the considerations in addition to the adaptive management framework that the Corps will examine in implementing the actions in the biological opinions. These factors may affect the schedule and scope of the proposed actions, and operational decisions on flows, spill and juvenile fish transportation.

AUTHORITIES

If potential actions in the hydropower and habitat sectors require additional authority and/or congressional direction, the Corps, on a case by case basis, will examine the appropriate course of action. This may include preparation of authorizing documents, requests for appropriations, notification to congressional committees, preparation of NEPA documents or other actions.

EMERGENCIES

Unforeseen project emergencies, drought, power reliability, floods or other natural disasters can occur and may require modifications in operations at Corps projects. The NMFS 2000 BiOp considered that there could be low runoff years which could result in lower in-river survival conditions (NMFS FCRPS 2000 Biological Opinion Appendix D page D12, D21). The opinion also anticipated there may be situations such as power emergencies, navigation and flood control operations or other emergencies that would

require variation from the operations described in the Reasonable and Prudent Alternative (NMFS FCRPS 2000 Biological Opinion page 9-62). Operational measures, including spill, flow objectives, reservoir fill or draft goals, and other actions, may be curtailed if necessary to maintain power system reliability, sufficiency, or for other emergencies. Action 11 of the RPA in the NMFS 2000 BiOp provides that the Action Agencies develop procedures for carrying out actions that could not be anticipated in the planning process. The Corps will work with NMFS, USFWS and the other Action Agencies to develop protocols to address how to handle emergency situations which require the Corps to adopt operations different than those measures in the Biological Opinions. The protocols would provide guidance to the Technical Management Team (TMT) to determine the impact to listed fish resulting from the variation. The Corps would consider the effects identified through this process in making final decisions on variations to the operations recommended in the biological opinions.

TRIBAL/TRUST RESPONSIBILITIES

The Corps will comply with the Executive Order on Consultation and Coordination with Indian Tribal Governments. In formulating and implementing policies that have tribal implications, the Corps will consult with the affected tribes early in the process. In addition, the Corps with work with NMFS and USFWS in their implementation of Secretarial Order

on American Indian Tribal Rights, Federal-Tribal Trust Responsibilities and Endangered Species Act.

COLUMBIA RIVER TREATY

The Corps, a member of the U.S. Entity along with BPA, and others coordinate the planning and operation of the FCRPS with Canada through a variety of arrangements. Examples include development of assured operating plans and detailed operating plans under the Columbia River Treaty, and arrangements with Canada for mutually beneficial non-power uses agreements. To the extent possible, the Corps utilizes these mechanisms to coordinate operations identified in the BiOps. However, in agreeing to implement the BiOps, the Corps is not relying on specific operations of projects in Canada.

In 1999, the United States Entity decided to sign a Libby Coordination Agreement (LCA) with the Canadian Entity to resolve an existing difference between the Entities regarding Libby coordination and operations for nonpower requirements (NPRs). The LCA recognizes the continued operation of Libby for endangered species, and provides for two separate annual operations that help to minimize any adverse impact of the sturgeon operation on the operation of Canada's Kootenay River projects. The first operation is provisional draft of Canada's Arrow reservoir and exchanges of

power between the BPA and British Columbia Hydro and Power Authority; the second is an optional storage exchange between the Libby project and Canadian storage. The LCA can be terminated for any reason by either Entity with 30 day written notice.

ENVIRONMENTAL COMPLIANCE

When implementing the Incidental Take Statements and Reasonable and Prudent Alternatives of the Biological Opinions, the Corps reviews its compliance with all applicable laws. Implementation dates are dependent upon this review. These laws include, but are not limited to:

Archaeological Resources Protection Act
National Historic Preservation Act
Native American Graves Protection and Repatriation Act
Clean Air Act
Clean Water Act
Endangered Species Act
Fish and Wildlife Coordination Act
National Environmental Policy Act
Pacific Northwest Electric Power Planning and Conservation Act
Migratory Bird Treaty Act
Coastal Zone Management Act

Safe Water Drinking Water Act
Flood Control Act of 1944
Magnuson Fishery Conservation and Management Act
Wild and Scenic Rivers Act
Marine Protection, Research, and Sanctuaries Act
River and Harbors Acts
Executive Orders and CEQ Guidelines and Memorandum
Other Federal, State and Local Plans and Laws

Attachment C further discusses the type of environmental documentation available on several of these acts. Since this ROCASOD addresses 2001 and future years, the Corps does not anticipate issuing RODs on an annual basis to address specific operations. The Corps will consider the available information on the effects of different operations.

FUNDING/APPROPRIATIONS

The Corps prepares a budget request approximately 2 years ahead of actually receiving an appropriation from Congress. The Corps also receives funding from BPA on certain powerhouse features. The Corps will review the actions in the BiOps within the annual budgetary guidance. If funding is less than appropriate, the Corps will work with the Services and other federal and state agencies and tribes to prioritize the work for that fiscal

year.

XII. INCIDENTAL TAKE STATEMENT AND CONSERVATION RECOMMENDATIONS

The Corps has considered the terms and conditions of the Incidental Take Statements. The Corps will work with the other Action Agencies and intends to implement the measures which are assigned to the Corps. In addition, the Corps will coordinate these measures through the regional forum as explained in Section XIII. If implementation of the terms and conditions is delayed, the Corps, NMFS and USFWS will determine whether further consultation is required. The Corps will also review the Incidental Take Statement through the 1- and 5- year Implementation Planning process. The Corps is also considering implementation of the conservation recommendations.

XIII. REGIONAL INVOLVEMENT

The Corps will continue to participate through several avenues to solicit and consider tribal, federal, state and public comments on actions being taken to implement the BiOps.

REGIONAL FORUMS

The Corps will participate to the extent practicable in the regional forum established to improve coordination of actions identified in the BiOps. The forum is a collaborative effort of federal, state and tribal agencies. As of present, there are four teams. The Implementation Team (IT) provides guidance to the three other teams and is intended to resolve any policy disputes. The Technical Management Team makes recommendations on the weekly operation of the FCRPS. A System Configuration Team focuses on reviewing and prioritizing biological and facilities design studies as well as construction of structural modifications to the FCRPS projects. The Water Quality Team principally works on total dissolved gas and water temperature issues at FCRPS projects. Although the Corps continues to support and participate in these forums, the Corps does not believe that the operation of the FCRPS would jeopardize listed species if such forums no longer existed.

The Corps also has established regional coordination teams which include the Fish Facility Design and Review Workgroup, the Fish Passage O&M Coordination Team and Studies Review Workgroup. The Corps is committed to solicit regional input through these or other forums into the planning, design, construction, and operation of fish facilities as well as the research, monitoring and evaluation of such facilities.

TRIBAL CONSULTATION

The Secretarial Order on American Indian Tribal Rights, Federal-Tribal Trust Responsibilities and Endangered Species Act issued by the Department of the Interior and Commerce provides for government to government consultations with affected Tribes. The NMFS and USFWS provided the affected Tribes with an opportunity to consult, which included review of the draft BiOps. Comments received from the Tribes and Corps input on responses to the draft biological opinion were discussed during consultation.

In addition, the Corps will comply with the Executive Order #13175 on Consultation and Coordination with Indian Tribal Governments. In formulating and implementing policies that have tribal implications, the Corps will consult with the affected tribes early in the process.

For purposes of this ROCASOD, the Corps has taken several actions to consult with the Tribes. The draft BiOps were posted on the World Wide Web and made available to thirteen Native American Tribes in July 2000 for their review and comment. The NMFS and USFWS discussed comments received from the Tribes with the Corps and other action agencies during consultation and considered this information in preparing the final BiOps. The Corps also participated in several meetings with Tribes to discuss the draft BiOps.

PUBLIC INVOLVEMENT

The Corps will utilize existing processes to solicit public input in making decisions on future project modifications, habitat restoration, operational changes and other actions identified in the BiOps. These processes include open meetings of the Technical Management Team for weekly FCRPS operations, the System Configuration Team for project modifications, and NEPA process for new significant actions.

NORTHWEST POWER PLANNING COUNCIL

The Corps will also continue to meet its responsibilities under the Pacific Northwest Electric Power Planning and Conservation Act through its consideration of the Northwest Power Planning Council's Fish and Wildlife Program. The Corps will continue to provide input to the periodic review and update by the Council of their Fish and Wildlife Program. Where the requirements of the Biological Opinion and NPPC's Fish and Wildlife Program are not consistent, the Corps will continue its dialogue with the NPPC.

XIV. STATEMENT OF DECISION

I have taken into consideration the environmental consequences, the economic costs and the biological data supporting the hydropower operations and project improvements, habitat actions and hatchery reforms discussed in this ROCASOD. The Corps has determined that adequate authority, NEPA documentation, and biological rationale exist to implement certain hydropower operations and investigate future hydropower, habitat and hatchery actions.
I have taken into account the effect of the operations on compliance with State and Tribal water quality standards. Although difficult to determine without the establishment of clear, implementable TMDLs (for all users of Columbia River and Snake River System who contribute to the non-attainment of State and Tribal water quality standards), the Corps has determined that the actions set forth in the NMFS and USFWS 2000 BiOps are consistent with our legal obligations under the CWA.

I have taken into account the Northwest Treaty Tribes' fishing rights, the United States' trust responsibility to Indian Tribes and its responsibility to act in a manner consistent with the trust responsibility. The actions which the Corps will implement are designed to lead to increased survival and recovery of the listed salmon species with beneficial results to the Treaty Tribes' fishery and benefits to the Northwest Region as a whole. Although there is scientific disagreement, the conclusions in the NMFS and USFWS 2000 BiOps take into account the differing scientific opinions and

interpretations of available information. The Corps' decision to rely on the biological information contained in the BiOps is based, in part, on NMFS and USFWS consideration of the differing scientific (biological) information and their expertise on the effects on other species of interest to Northwest Tribes.

I find that the determinations made in this ROCASOD are sufficient for the Corps to adequately implement the reasonable and prudent alternatives and incidental take statements in the NMFS and USFWS 2000 BiOps. These actions are a coordinated mixture of system operations, configuration measures, habitat restoration and continued monitoring activities which are consistent with the reasonable and prudent alternative and incidental take statement in the USFWS and NMFS 2000 BiOps. The Corps has determined that these actions, taken together, will meet the Corps' responsibilities under the ESA to avoid jeopardy to twelve listed anadromous species (Snake River spring/summer chinook, fall chinook and sockeye salmon; upper Columbia River spring chinook; Snake River, lower Columbia, middle Columbia, upper Columbia River, and upper Willamette River steelhead; lower Columbia chum salmon; lower Columbia chinook salmon; and upper Willamette River chinook salmon), Kootenai River white sturgeon and bull trout and will not further adversely affect their critical habitat. Further, it will not adversely affect bald eagles, grizzly bears, woodland caribou, Canada lynx, northern Idaho ground squirrel, gray wolves or four listed

plant species.

Issued in Portland, Oregon on May __, 2001.

Carl A. Strock
Brigadier General, U.S. Army
Division Engineer

ATTACHMENT A

ENDANGERED SPECIES ACT CONSULTATION HISTORY

Since 1991, the regional discussions on system modification have been in response to the listings of several salmonid and other fish species in the basin. On November 20, 1991, NMFS declared the Snake River sockeye (*Oncorhynchus nerka*) salmon endangered effective December 20, 1991. NMFS later designated the Snake spring/summer chinook (*Oncorhynchus tshawytscha*) and fall chinook (*O. tshawtscha*) salmon as threatened species effective May 22, 1992. In response to these ESA actions, the Corps, with the Bonneville Power Administration (BPA) and Bureau of Reclamation (Reclamation) as cooperating agencies, addressed river management actions for the 1992 migration season in the 1992 Columbia River Salmon Flow Improvement Measures Options Analysis/Environmental Impact Statement (OA/EIS). Biological Assessments were prepared pursuant to Section 7 of the ESA and a Biological Opinion on listed Snake River salmon was issued on April 10, 1992, indicating the operation would not likely jeopardize the continued existence of the Snake River listed salmon. The USFWS concurred that operation would not likely adversely effect the peregrine falcon (*Falco peregrinus*) and the bald eagle (*Haliaeetus leucocephalus*) in a letter dated February 10, 1992. The Corps issued a Record of Decision (ROD) for 1992 operations on April 10, 1992.

In 1993, the Columbia and Snake Rivers Flow Improvement Measures for Salmon Supplemental Environmental Impact Statement (SEIS), issued on March 5, 1993, was prepared to supplement the 1992 OA/EIS and incorporated the original document by reference. The SEIS generally examined flow improvement actions similar to those evaluated in the 1992 OA/EIS, but as recurring annual events over a longer time period. The SEIS also addressed related regional studies being undertaken, including the System Operation Review (SOR), the System Configuration Study (SCS), and Northwest Power Planning Council's (NPPC) Fish and Wildlife Program.

A Biological Assessment on the operation of the Federal Columbia River Power System (FCRPS) was submitted by the Corps, BPA, and Reclamation to NMFS on February 17, 1993. During consultation with NMFS, the Corps, BPA and Reclamation made modifications to the proposed operation of the FCRPS. NMFS, in its May 26, 1993, Biological Opinion identified the operation as one that would not likely jeopardize the continued existence of the Snake River sockeye, spring/summer chinook, and fall chinook salmon stocks in 1993. Although the Biological Assessment identified a proposed operation expected to recur annually over a longer period of time, NMFS limited their Biological Opinion to 1993 only. A Biological Assessment on bald eagles, peregrine falcons, grizzly bears (*Ursus arctos*), and gray wolves (*Canis lupus*) was submitted to the USFWS on March 1, 1993. The

proposed operation of the hydrosystem as described in that March 1, 1993, Biological Assessment was subsequently modified based on consultation with NMFS and a description of the modified operation was provided to USFWS on June 3, 1993. The USFWS concurred that the operation would not likely adversely effect the gray wolf, grizzly bear and peregrine falcon, and would not likely jeopardize the continued existence of the bald eagle in their Biological Opinion dated June 11, 1993. The Corps issued a ROD on June 18, 1993, for 1993 and future year operations.

Since NMFS limited their previous Biological Opinion to 1993 operations only, the Corps, BPA, and Reclamation prepared and submitted a Biological Assessment on 1994-1998 Federal Columbia River Power System (FCRPS) operations to NMFS and USFWS on December 2, 1993. The proposed FCRPS operations described in that Biological Assessment were subsequently modified via letter from W. Pollock (BPA), K. Pedde (Reclamation) and D. Geiger (Corps) to G. Smith (NMFS), dated January 31, 1994. NMFS issued a Biological Opinion concerning operation of the FCRPS for 1994 through January 31, 1999, on March 16, 1994. That March 16, 1994, Biological Opinion concluded that the operation of the FCRPS was not likely to jeopardize the continued existence of the endangered or then threatened Snake River salmon species. The USFWS concurred in a letter dated April 11, 1994, that the bald eagle, with the exception of the Lake Roosevelt population, the gray wolf, the grizzly bear, and the peregrine falcon would

not be adversely affected by the operation. On July 27, 1994, the USFWS issued a Biological Opinion on the Lake Roosevelt bald eagle population and the five middle Snake River aquatic snails, and a Conference Opinion on the Kootenai River white sturgeon (*Acipenser transmontanus*). These opinions concluded that the 1994-1998 operations would not jeopardize these species.

Concurrent with the completion of the 1994-1998 consultations, the Idaho Department of Fish and Game and the State of Oregon, joined by four treaty Indian tribes, challenged in Federal district court proceedings the legal adequacy of NMFS' 1993 FCRPS Biological Opinion (Idaho Department of Fish and Game v. National Marine Fisheries Service, Civ. No. 92-973-MA (Lead Case), 93-1420-MA, 93-1603-MA, (D. Or.)). On March 28, 1994, U.S. District Court Judge Malcolm Marsh issued his opinion setting aside NMFS' Biological Opinion on the 1993 FCRPS operation, Biological Opinion on 1993 Operation of the Federal Columbia River Power System, National Marine Fisheries Service, May 26, 1993, and the Corps' ROD issued in 1993. In a judgment entered on April 28, 1994, the court remanded the Biological Opinion and RODs (Corps and Reclamation) to Federal defendants "with instructions to review and reconsider them, or at their option, to review and reconsider the 1994-1998 hydropower Biological Opinion, in light of the (sic) court's order of March 28, 1994, and to submit a Biological Opinion and Records of

Decision to address that ruling by June 27, 1994, unless that date is extended by further order of this court'' (Opinion, page 4).

The Corps and certain other defendant Federal agencies opted to reconsider the 1994-1998 FCRPS Biological Opinion rather than expend limited resources reconsidering the challenged 1993 Biological Opinion about FCRPS operations that were then completed. The Federal agencies further decided to work cooperatively with all of the other parties, and particularly with the sovereign States and treaty Indian tribes, rather than appealing the Judgment and continuing to litigate the issues raised in the case.

From May 9, 1994, through November 30, 1994, the Corps and other Federal agencies participated in a series of post-judgment discussions and technical working groups with the parties to this litigation. The purpose of these discussions was to further facilitate the collection and consideration of credible and relevant scientific evidence in a re-evaluation of the application of the standards of ESA § 7(a)(2) to the FCRPS and of alternatives and measures for FCRPS operation and facilities.

With the conclusion of these post-judgment discussions, consultation was formally reinitiated in a December 15, 1994, letter from Major General Ernest J. Harrell (Corps) to William W. Stelle, Jr. (NMFS) and Michael Spear (USFWS), transmitting the Supplemental Biological Assessment on Federal

Columbia River Power System Operations on behalf of the Corps, BPA, and Reclamation. That letter identified as the proposed action the 1994-1998 proposed operations relative to the previous consultation, while at the same time the Supplemental Biological Assessment submitted for consideration longer-term changes in operations and structures such as those identified in the System Operations Review Environmental Impact Statement (SOR) and the System Configuration Study (SCS).

Two relevant listing actions took place in 1994. The USFWS listed the Kootenai River white sturgeon as endangered on October 6, 1994 (59 FR 45989). A significant projected decline in adult Snake River chinook salmon populations in 1994 and 1995 was the basis of NMFS' proposal to reclassify Snake River spring/summer and fall chinook salmon from threatened to endangered status (Emergency Interim Rule, August 18, 1994, 59 FR 42529 and proposed rule, December 28, 1994, 59 FR 66784). This reclassification was not implemented, the Spring/Summer Chinook are still listed as threatened.

The USFWS and NMFS prepared separate Biological Opinions concerning the effects of the operation of the FCRPS upon listed species within their respective jurisdiction.

The USFWS opinion was provided to major General Ernest J. Harrell (Corps)

by letter dated March 1, 1995, from the Acting Regional Director, USFWS. NMFS issued its opinion, Reinitiation of Consultation on 1994-1998 Operation of the Federal Columbia River Power System and Juvenile Transportation Program in 1995 and Future Years on March 2, 1995.

The SOR ROD selected the operations defined in the 1995 biological opinions as the System Operation Strategy Preferred Alternative described in the Columbia River System Operation Review Final Environmental Impact Statement and modified in the SOR ROD.

The upper Columbia River, the Snake River, and the lower Columbia River steelhead populations were listed as endangered on August 18, 1997, threatened on August 18, 1997, and threatened on March 19, 1998, respectively. The Corps, BPA and Reclamation (collectively referred to as the action agencies) jointly prepared a biological assessment (BA) on the effects of 1998 and future operation of the FCRPS on listed steelhead populations and submitted the assessment to NMFS on January 21, 1998. The BA was based on the coordinated package of the 1995 NMFS Biological Opinion and USFWS Biological Opinion. During consultation, NMFS and the action agencies met numerous times to discuss and exchange information regarding flows, juvenile fish transportation, spill, long-term configuration studies, adaptive management, the Incidental Take Statement and Conservation Recommendations. As a result of these discussions, NMFS

requested in a letter dated May 11, 1998, that the action agencies consider supplemental measures to their biological assessment. The Corps, on behalf of the action agencies, agreed to the supplemental measures in a letter dated May 13, 1998, relying on the NMFS' determination that the actions will avoid jeopardy to the listed steelhead populations. NMFS issued the Supplemental Biological Opinion, Operation of the Federal Columbia River Power System regarding these populations on May 14, 1998 (1998 BiOp).

The 1998 ROCASOD documented the Corps' decision to implement measures identified in the NMFS Supplemental Biological Opinion, Operation of the Federal Columbia River Power System Including the Smolt Monitoring Program and the Juvenile Fish Transportation Program, dated May 14, 1998, (1998 Supplemental BiOp) to address several steelhead populations listed in 1997 while continuing to undertake certain measures identified in previous ESA documents.

Six additional species were listed in 1999: upper Columbia River spring chinook salmon, listed as endangered; the lower Columbia River chinook salmon, listed as threatened; the middle Columbia River steelhead, listed as threatened; the lower Columbia River chum salmon, listed as threatened; the upper Willamette River steelhead, listed as threatened; and the upper Willamette River chinook salmon, listed as threatened on May 24, 1999.

In a letter, dated May 20, 1999, the Action Agencies proposed to continue to operate the FCRPS in accordance with the 1995 BiOps, the 1998 Supplemental BiOp and the respective Action Agencies' RODs to address the recently effective listings and requested NMFS concurrence. The NMFS, in a letter dated June 23, 1999, stated that Action Agencies should address the six new listed species through a formal consultation leading to a supplemental BiOp. NMFS agreed that, while the consultation is being completed, the FCRPS should be operated consistent with past BiOps and that any biological requirements of the newly listed species could be accommodated through the in-season adaptive management process.

During consultation, NMFS and the action agencies met numerous times to discuss and exchange information. In a letter, dated October 14, 1999, NMFS concurred that, until the broader, basin-wide consultation scheduled for the spring of 2000 (referred to as the Multi-Species Consultation) is concluded, existing measures provide adequate protection for five of the species (upper Columbia River spring chinook salmon, lower Columbia River chinook salmon, middle Columbia River steelhead, upper Willamette River steelhead, and upper Willamette River chinook salmon). For the lower Columbia River chum salmon, NMFS proposed that the Action Agencies implement additional measures to provide for chum salmon spawning in shallow mainstem areas around Ives and Pierce islands. The NMFS stated

that the operations should be implemented if the best hydrological data indicate that precipitation, runoff and reservoir storage are likely to support the operation without adverse effect on implementation of the 1995 Reasonable and Prudent Alternative (RPA), the 1998 Supplemental proposed action or the Vernita Bar agreement. The Venita Bar agreement is to provide certain flow levels from fall to early spring to protect and preserve salmon spawning and rearing at Vernita Bar below Priest Rapids Dam. The Action Agencies responded to NMFS' request in a letter, dated December 8, 1999, to implement the proposed operations under the specified conditions in the NMFS letter dated October 14, 1999. NMFS issued a Supplemental Biological Opinion on the Operation of the Federal Columbia River Power System Including the Juvenile Fish Transportation Program: A Supplement to the Biological Opinion signed March 2, 1995, and May 14, 1998, For the Same Projects, dated February 4, 2000 (2000 Supplemental BiOp). The Corps issued a Record of Consultation and Summary of Decision on July 11, 2000.

The Action Agencies (Corps, Reclamation and BPA) reinitiated consultation and prepared a Multi-Species Biological Assessment of the Federal Columbia Power System (1999 Multi-species BA), including a status of its examination of alternatives for the lower Snake River dams, and submitted it to NMFS and USFWS on December 21, 1999. The 1999 Multi-species BA proposed operations that had been developed as part of the 1995 BiOps

and the supplemental BiOps issued thereafter. It also proposed a conceptual framework that would establish performance measures for the dam and reservoir projects, prioritize actions, measure results and experimentally manage to help resolve key uncertainties.

A Biological Opinion on Effects to Listed Species from Operations of the Federal Columbia River Power System was issued by the US Fish and Wildlife Service on December 20, 2000 (USFWS 2000 BiOp) and the Biological Opinion was issued by National Marine Fisheries Service on December 21, 2000 on the Reinitiation of Consultation on Operation of the Federal Columbia Power System, Including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation Projects in the Columbia Basin (NMFS 2000 BiOp). By letter dated January 25, 2001, USFWS amended their opinion to correct some editorial mistakes and omission of an analysis of anticipated take and some terms and conditions.

Critical habitat has been designated for twelve anadromous species and NMFS 2000 BiOp concluded that the Reasonable and Prudent Alternative did not destroy or adversely modify designated critical habitat for all listed anadromous species. Critical habitat has not been designated for the Kootenai River white sturgeon and bull trout and therefore USFWS did not analyze critical habitat in the USFWS 2000 BiOP.

This 2001 ROCASOD is the Corps notification to the NMFS and USFWS of its decision on the actions in the biological opinions per 50 CFR Part 402.15.

ATTACHMENT B

PROJECT USES

Corps' dam and reservoir projects in the Columbia River Basin are authorized for construction, operation and maintenance in accordance with specific legislation (see Table B-1). Each authorization is accompanied by a Report of the Chief of Engineers outlining recommendations and the general plans for each project. The operation of each project or for their coordinated operation within the total system was left to the discretion of the Chief of Engineers. The Corps is responsible for deciding how to operate and maintain their projects based on principles of multiple-use operation, operating experience, public concerns, available water, public health and safety, available funding, international agreements and the needs of the Pacific Northwest and the Nation.

Flood Control

The primary flood control season in the Columbia River System is May through July. Rain-induced floods also occur in the winter in the southern and western parts of the drainage. Because the ability to forecast the source of most flooding (snowmelt) in the study area has improved over time, the amount of flood control storage can be determined several months in

advance. Consequently, flood control storage space in Columbia River reservoirs is maintained only during those months with high flood risk, and the amount of space needed can be predicted by the amount of runoff expected. This situation makes it possible to use the reservoir space to store water for other uses (e.g., hydropower, irrigation, recreation, and fish flows), when there is reduced flood risk, and for joint uses during the flood season. In conjunction with reservoir operations in Canada under the Columbia River Treaty and several non-federal dams in the basin, the FCRPS is operated to minimize flood damages in the lower Columbia River and individual projects for local flood control protection. The primary Corps projects with flood control space are Dworshak, Albeni Falls, Libby and John Day.

Navigation

The Columbia-Snake Inland Waterway from the Pacific Ocean to Lewiston, Idaho consists of two segments. The first is the 40-foot-deep, open-river channel for ocean-going vessels that extends 106 miles from the ocean to Portland, Oregon and Vancouver, Washington. The second is the shallow-draft barge channel that extends 359 miles from Vancouver to Lewiston, Idaho.

Navigation between Bonneville Dam and Lewiston is possible because each

dam has a system of locks, and the projects maintain sufficient water at minimum operating pool (MOP) to pass vessels in the authorized 14-foot channel depth. This navigation channel connects the agricultural interior basin with the deep-water ports on the lower Columbia River.

Table B-1. List of Project uses and Authorizing Laws

PROJECT NAME:			
ALBENI FALLS DAM Pend Oreille River Bonner County, ID			
BONNEVILLE LOCK AND DAM Columbia River, Multnomah County, OR Skamania County, WA			
CHIEF JOSEPH DAM – RUFUS WOODS LAKE Columbia River., Douglas and Okanogan Counties, WA			
THE DALLES LOCK AND DAM – LAKE CELILO Columbia River, Wasco County, OR and Klickitat County, WA			

DWORSHAK DAM AND RESERVOIR North Fork of the Clearwater River. Clearwater County, ID			
ICE HARBOR LOCK AND DAM – LAKE SACAJAWEA Snake River. Walla Walla and Franklin Counties, WA			
JOHN DAY LOCK AND DAM – LAKE UMATILLA Columbia River. Sherman County, OR. Klickitat County, WA.			
LIBBY DAM – LAKE KOOCANUSA Kootenai River. Lincoln County, MT			
LITTLE GOOSE LOCK AND DAM – LAKE BRYAN Snake River. Whitman and Columbia Counties, WA			
LOWER GRANITE LOCK AND DAM Snake River. Whitman and Garfield Counties, WA			

LOWER MONUMENTAL LOCK AND DAM Snake River. Walla Walla and Franklin Counties, WA			
MCNARY LOCK AND DAM LAKE WALLULA Columbia River. Umatilla County OR Benton County WA			

Power Generation

Falling water provides the energy to turn power-generating turbines at the dams. Hydropower supplies approximately 75 percent of the electricity in the Pacific Northwest. When in surplus, it is also an export product for the region. The remainder of the region's electricity comes from thermal resources, mainly nuclear and coal-fired plants.

Power production on the Columbia River System involves three primary objectives that system managers try to meet, within a variety of system constraints:

- Meeting the region's firm energy commitments
- Optimizing future energy production through refill
- Maximizing non-firm energy production to keep regional power rates as

low as possible

Firm power contracts are long-term commitments that carry an assurance to meet some or all of a customer's load requirements over a defined period. These contracts are based on an estimate of the firm energy load-carrying capability (FELCC) of the system. For the past several years, the critical period has been a 1-year critical period and is no longer a four-year critical period. The critical period is the water year 1936-1937 from which the FELCC is based on. Operations for fish have limited the system to result in a 1-year critical period. The Pacific Northwest Coordination Agreement (PNCA) operating year 1995-96 was the first year the critical period became a 1-year critical period. The Corps' contribution to the FELCC is estimated on an annual basis as part of the PNCA process. The Northwest's publicly owned utilities have first claim on power produced by the Federal Columbia River System projects. BPA has long-term firm power sale contracts with over 120 utilities, including municipalities, public utility districts, and rural cooperatives. The agency also sells firm power directly to some of the region's large industries, including aluminum smelters.

As plans are formulated to draft reservoirs to meet firm power needs and generate non-firm energy, non-power uses including flood control and water for fish migration are put into the planning and then the power

capability is estimated. Plans include enough water retained in storage to provide flows necessary for spring fish migration and to ensure a high likelihood of reservoir refill by summer to fulfill flow augmentation for fish, recreational needs, and provide water for next year's non-power needs.

Non-firm generation is power in excess of that needed to meet firm power requirements. In most water years, stream flows are high enough to produce at least some non-firm generation. This is particularly true after January 1, when initial runoff forecasts make it possible to estimate how much water will be available from snowpack runoff. In an average year, non-firm generation may add 25 percent or more to the hydro system's generating output. Non-firm power is generally sold with no guarantee of continuous availability and with the ability to terminate delivery on very short notice. Non-firm energy is purchased from BPA by Northwest utilities, California utilities, and some large industries that contract directly with BPA for power. Customers in the Northwest have priority to purchase non-firm power.

Irrigation

Irrigation is an authorized use at several Corps projects. Irrigation water is withdrawn from the projects by pumping stations at the reservoir margins. None of the projects on the lower Columbia or Snake rivers have storage

allocated to irrigation. The projects are normally at pool elevations high enough to permit the existing pumps to operate. The irrigation season generally extends from about April through September, but can continue into October or November.

Fish

A variety of fish facilities and programs have been developed at the affected projects. Adult fish passage facilities were built into all eight of the mainstem Columbia and Snake River dams. In the early 1950s, the Corps began an intensive program, in cooperation with regional fish agencies and other experts, to improve adult fish passage and develop methods of safe juvenile fish passage at each of the mainstem dams. These research efforts led to the development of submersible traveling screens to divert juvenile fish away from turbine intakes and into special conduits for subsequent bypass around the dam or collection for transport downstream by truck and barge. Seven of the eight mainstem projects have these systems. The Dalles currently use sluiceways and fish passage spill.

In addition to physical facilities, other adaptations in water management are implemented on an annual basis to provide for fish and wildlife. The upstream storage projects have been operated in an attempt to meet year-round flow objectives and spill at mainstem projects has been provided for

juvenile fish passage.

Rivers and reservoirs are also home to fish that do not migrate to the sea. These fish, such as trout and burbot, are referred to as resident fish. System operators monitor water levels to protect the migrations, and spawning and rearing habitat of resident fish in the reservoirs and below the projects as much as possible.

Wildlife

Although the focus of most mitigation and enhancement actions of Federal projects in the Columbia River System has been on fish, wildlife protection is also a consideration and the subject of ESA consultation for example, the bald eagle. Much of the land within and adjacent to Federal project boundaries is designated and managed as wildlife habitat. Several national wildlife refuges are located on project lands, and a large number of other parcels are operated as habitat management units. Wildlife considerations also affect project operations and water management. In addition, special operating requirements are put into effect at certain projects in the early spring, when geese are selecting their nesting sites, to keep geese away from areas that may later be inundated with water.

Recreation

Recreational facilities are provided at all of the projects. Facilities are provided by the project operators or a variety of Federal, State, local, and tribal agencies. Key activities include fishing, swimming, waterskiing, picnicking, camping, hunting, boating, windsurfing, and sightseeing. Use of the reservoirs occurs mostly from late spring through early fall. Normal operation of the projects for flood control, power generation, and other purposes sometimes conflicts with optimum conditions for recreational use.

Water Quality

Water quality within the river system is considered by the Corps in the design and operation of the projects. Minimum outflow requirements, which generally vary by season, are specified for each project to help maintain desired downstream conditions.

Water Supply

The Corps projects store water utilized by some cities and industries by diversion or pumping, but these diversions are small.

ATTACHMENT C

ENVIRONMENTAL DOCUMENTATION

The following laws and regulations are anticipated to be addressed for some, if not all, of the actions recommended in the Biological Opinions.

NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act (NEPA) requires federal agencies to assess and document the significance of environmental impacts which may result from implementation of proposed federal actions. In meeting the requirements for completion of the NEPA process, the Corps will conduct the appropriate NEPA process and documentation to fulfill the requirements of the Act and be in compliance with NEPA regulations promulgated by the Council of Environmental Quality.

The RPAs and Terms & Conditions contained in the final BiOp's include requirements for both studies and specific actions. All studies will involve appropriate NEPA compliance as studies are completed and specific actions are proposed or recommended. New actions or changes in operations may require more immediate NEPA compliance.

Various National Environmental Policy Act documents have been prepared for individual projects, including three environmental impact statements prepared in 1990's which analyzed operation of federal projects, primarily to benefit salmon species listed under the Endangered Species Act.

The NEPA documents relevant to this decision include individual project EISs, the 1992 Columbia River Salmon Flow Improvement Measures Options Analysis Environmental Impact Statement and its 1993 Supplement, which analyzed alternatives to benefit salmon species listed under the Endangered Species Act, and the System Operation Review (SOR) EIS concluded in 1997.

Since 1997, several new species have been listed and there has been modifications to the operations. The Corps has reviewed the biological requirements of the species listed since 1997 and the change in the operations. The Corps believes that the effects are within the range of the analysis conducted in the SOR EIS. These effects include improved survival of listed salmonids, bull trout and white sturgeon, reduction in hydropower generation, decrease in recreational opportunities, resident fish and wildlife impacts, increase in total dissolve gas levels, and additional exposure of cultural resources at certain projects. Except for studies of certain future operations and structural modifications of the projects, the Corps has determined that the effects of the operations to be within the analysis

contained in the existing NEPA documentation.

Specific operational actions in the biological opinion which will require additional NEPA documentation include an alternative flood control operation in the upper Columbia referred to as VARQ and any system flood control modifications that may be recommended as part of a system wide flood control review. Project modifications such as breaching Snake River projects as well as system modifications which have site specific impacts would need to be evaluated in separate NEPA documents. There are certain project operation and maintenance activities which meet categorical exclusions.

NEPA compliance for habitat improvement actions in various basins or watersheds would be conducted on an individual basin or sub-basin basis, as appropriate. NEPA compliance for hatchery improvement actions would be conducted on an individual basis, as appropriate.

NATIONAL HISTORIC PRESERVATION ACT / NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires the Corps to take into account the effects its proposed undertakings on historic properties listed on or eligible for listing on the National Register

of Historic Places. The NHPA also requires the Corps to consult with State Historic Preservation Officers (SHPOs), tribes, and the Advisory Council on Historic Preservation (ACHP). In meeting the requirements of the Act, the Corps will conduct the appropriate surveys, provide required documentation, and enter into appropriate Memorandums of Agreement (MOA's) or Programmatic Agreements (PA's) with the involved SHPO(s) and the ACHP to address any adverse effects which may result from implementation of the action items stipulated in the BiOp's. Under the Native American Graves Protection and Repatriation Act (NAGPRA), the Corps will continue to follow the procedures described in the Department of Interior implementing regulations for the appropriate repatriation/disposition of Native American remains and objects covered by this Act.

CLEAN WATER ACT

In the opinion, dated February 16, 2001 (National Wildlife Federation, et al. v. U.S. Army Corps of Engineers, Civ. # 99-442-FR(D.Or. 2001)) Judge Frye ruled that in taking action to comply with its legal obligations under the Endangered Species Act, the Corps was not free to do so without considering compliance with its legal obligations under the Clean Water Act (CWA). Specifically, the Corps was ordered to consider the impacts of its operations of the FCRPS on the attainment of water quality standards. In

response to that directive, the Corps has examined the impact of its project operations on meeting states' total dissolved gas (TDG) and temperature water quality standards and how we will seek to comply with both ESA and those water quality standards.

The federal dams on the Lower Snake and Columbia rivers do not require permits under Section 402 of the CWA, and because they do not require a federal permit, they are not subject to Section 401 of the CWA. Because they are not subject to Section 401 of the CWA, states' water quality standards are not, in and of themselves, enforceable requirements applicable to Corps dam operations within the meaning of the Clean Water Act. However, the Corps recognizes that enforceable standards applicable to governmental and non-governmental entities alike, by specific state-enacted laws and regulations, are requirements made applicable to Federal Agencies by Section 313 of the CWA.

The Corps has considered the Clean Water Act requirements in making operational decisions and structural modifications to the FCRPS projects. The Corps has taken several approaches during the last thirty years to address the reduction of total dissolved gas and water temperature issues associated with construction, operation, and maintenance of its dam and reservoir projects in the Columbia River Basin. The efforts are categorized as monitoring, reservoir operations, and structural modification.

Monitoring

The Corps established a data collection program to characterize the total dissolved gas level and water temperature in the system. There are fixed monitoring stations at different locations in the rivers, reservoirs and dams which provide real-time data as well as data collected as part of various studies which can be used to characterize TDG and water temperature. The fixed monitoring data was collected as a priority during the anadromous fish migration season (April - August) and as a secondary priority outside the anadromous fish migration season. In 1997, a total of 39 TDG instruments (26 of which belong to the Corps) were in operation at various reservoir forebay and tailwater locations. As requested by EPA and the state environmental quality departments, year-round monitoring also occurred at several key locations, including International Boundary, Dworshak (tailwater) Lower Granite (forebay and tailwater), Ice Harbor (forebay and tailwater), McNary (two forebay stations and one tailwater station), Bonneville (forebay) and Warrendale, Oregon. In 1998, two more fully automated stations to monitor incoming TDG levels at Lower Granite and McNary dams were installed. In addition, data on water quality has been collected at selected locations during different times for a variety of studies.

Each year a plan of action for monitoring is developed which identifies the sites to be monitored, roles and responsibilities of the different agencies, instrument installation, quality assurance/control and data storage. The plan of action is coordinated with agencies, and is available on the Corps Northwestern Division's web site. Historical as well as real time data are also posted. As identified in the NMFS 2000 BiOp, the Corps is committed to reviewing current monitoring sites to determine if changes should be made to the existing program.

The monitoring of water temperature and total dissolved gas, given current operational requirements, has identified different water quality concerns at the twelve Corps projects in the FCRPS. The following sections discuss Corps actions regarding TDG and then water temperature.

Total Dissolved Gas

TDG levels are a concern at the four lower Snake River projects, the four lower Columbia River projects and Chief Joseph Dam. There also may be of concern at Libby Dam on occasion.

Reservoir Operations: TDG levels at any project are affected by the level of TDG coming into the project from upstream sources and the amount of voluntary and involuntary spill that occurs at the projects. Involuntary spill

is that portion of the total river flow which must pass over a dam's spillway when the dam's powerhouse hydraulic capacity is exceeded. The maximum powerhouse hydraulic capacity is the maximum amount of water that can be pass through all turbine units operating within 1% of peak efficiency. Operating units within the 1% of peak efficiency is a condition of the NMFS 2000 BiOp to minimize mortality to juvenile fish. Powerhouse hydraulic capacity may be limited when a turbine unit is out of service for repair or when a turbine unit is not needed to generate power due to reduced power demands. To the extent practicable, unit repairs are scheduled by the Corps during times of low power demand and/or low stream flows to minimize instances of high spill and increased levels of TDG. The Corps has no way in knowing when reduced power demand will result in spill and relies on BPA to take appropriate action to minimize these situations. In these circumstances, the Corps has procedures in place to coordinate with regional entities through the TMT process. Given the unpredictable nature of involuntary spill, it is difficult to determine the parameters or conditions for which a variance for involuntary spill would be sought. Therefore, the Corps does not intend to request variances for such circumstances.

Voluntary spill is spill for juvenile fish passage and flow augmentation. Since the first listing of Snake River salmonids under the Endanger Species Act in 1991, voluntary spill for juvenile fish passage has been examined and modified over the last ten years. According to the 1992 Biological Opinion,

voluntary spill for juvenile fish for 12 hours at night was implemented at Lower Monumental, Ice Harbor, John Day, The Dalles and Bonneville dams in an attempt to achieve 70% fish passage efficiency (FPE) for spring outmigrants and 50% FPE for summer outmigrants. FPE is an estimated percentage of fish that pass the dam either over the spillway or through a bypass facility. In the NMFS 1995 BiOp, the timing, location and volume of voluntary spill was modified. 24-hour spill was initiated at Ice Harbor, The Dalles, and Bonneville dams; spill at collector projects during the spring migration was initiated; FPE was increased to 80% for all migrants. NMFS concluded that the benefits to project survival associated with fish passage spill resulting in TDG up to 120% was an acceptable risk. The 1998 Supplemental BiOp replaced the FPE goals with spill levels to 120% TDG. The NMFS 1998 BiOp also asked the Corps to test increasing voluntary spill at John Day Dam from 12 hours to 24 hours. Therefore, in order to meet the ESA requirements of avoiding jeopardy to listed salmonids, the Corps has been asked to provide voluntary fish passage spill to 120% exceeding states' water quality standards of 110% TDG. These requirements severely limit the Corps flexibility in unilaterally adjusting spill volumes or timing.

The Corps recognizes the interim reliance on fish passage spill to achieve juvenile survival levels results in exceedances of current states' water quality standards. The Corps is also being asked to voluntarily spill at Libby and Dworshak dams to meet flow objectives for listed sturgeon and salmon

respectively. These operations could result in exceedances of states' standards. As indicated earlier, the Corps is proposing a regional, multi-year agreement with the States of Oregon, Idaho, Montana and Washington to accomplish the goals of survival and recovery of the listed stocks and to accomplish the water quality goals of the CWA. This agreement would define the steps and timetable to develop a long term basin-wide water quality plan. (This plan is further described in Attachment D) . It would also address how to accomplish the NMFS and USFWS biological measures to spill to 120% TDG supported by current monitoring and reporting program and would replace the annual process of requesting variances. In the absence of a multi-year agreement, the Corps would coordinate and request periodic variances for ESA related fish passage spill.

In the interim 2001 migration season, water quality compliance for voluntary spill for fish passage in the mainstem Columbia and Snake rivers, and spill at storage projects, to attempt to meet ESA-mandated flow objectives is addressed as follows: The State of Washington adopted changes to the Surface Water Quality Standards (Chapter 173-201AWAC) to allow voluntary spill for fish passage until the year 2003. A variance from the State of Oregon for voluntary spill in the 2001 fish passage season was issued on March 30, 2001. The State of Idaho and the Nez Perce Tribe jointly sent a letter dated February 15, 2001, identifying conditions for a short term activity exemption. However, several of the conditions are

contrary to the biological opinion recommendations on Dworshak operations. These include maintaining the Dworshak pool elevation above interim draft level of 1520 identified in the biological opinion. Other conditions may not be physically achievable in the forecasted low runoff year in 2001; e.g. specifically that the Dworshak reservoir will be at full pool elevation of 1600 feet by June 30. At this time, there are no plans to spill at Libby project in Montana in 2001.

While it is the Corps' spill management goal to minimize operations that cause high levels of TDG, it is difficult to manage to an exact level with a number of variables in the system (e.g. the volume of water in the river, the operation of powerhouse units, water temperature, etc.). The Corps will work with BPA to minimize involuntary spill which may occur due to lack of power load. The Corps will continue to monitor the TDG levels and may make spill volume adjustments in an effort to provide more favorable passage conditions for the listed juvenile and adult Snake River salmon species. In coordination with the other agencies, these adjustments may occur if evidence of gas bubble disease is observed in fish, or if excessive TDG levels occur.

The Corps reservoir control process has been expanded to include spill operations scheduled in accordance with the regional water management groups called the Technical Management Team (TMT) and the Water Quality Team (WQT) recommendations and guidance, including adherence

to spill priorities and spill caps established in the annual TMT Dissolved Gas Management Plan.

Structural Changes: Since the initial construction of the dams, the Corps has also examined and made structural modifications to several projects to minimize TDG levels over the years. A structural solution, flow deflectors, keep water from plunging into deep tailwater pools were developed and installed in the tailwater of several dams. Gas reduction efforts were also complemented by powerhouse capacity expansion. With more water passing through the powerhouses and not over the spillways, less spill helped to further reduce gas levels in the tailwaters of the dams.

In 1994, the Corps began investigating additional structural modifications to reduce total dissolved gas at the four lower Snake and four lower Columbia projects in the Dissolved Gas Abatement Study. The Phase I of this study was to identify and evaluate structural and operational methods that could be accomplished in the short-term to immediately reduce TDG. One outcome of this phase was a recommendation to install flow deflectors at Ice Harbor and John Day dams. Construction of these deflectors was completed at Ice Harbor in 1998 and John Day in 1999. The flow deflectors at Ice Harbor and John Day dams were designed for voluntary fish passage spill to 120% TDG and the result is that higher levels of fish passage spill are provided than originally anticipated.

The Phase II gas abatement study is a more detailed technical study to further evaluate potential gas abatement measures for each project, and evaluate the potential system-wide effects of alternative gas abatement strategies. The study has undergone regional review at several points in its development as well as review by the Northwest Power Planing Council with the assistance of the Independent Scientific Advisory Board (ISAB) in September 1998. The ISAB was established by the Northwest Power Planning Council and the NMFS to provide independent scientific advice and recommendations on issues related to regional fish and wildlife recovery programs under the Northwest Power Act and the Endangered Species Act. The ISAB is designed to foster a scientific approach to fish and wildlife recovery and ensure the use of sound scientific methods in the planning and implementation of research and recovery strategies related to these programs. The ISAB made several recommendations on the dissolved gas abatement study including the following "The objective of reducing the total dissolved gas saturation of the Columbia/Snake mainstem to the Clean Water Act standard of 110% during times when water is spilled at dams involuntarily is unattainable even with major (and apparently impractical or prohibitively expensive) reconfiguration of the hydropower system short of dam breaching or major drawdowns. Attainment of the standard should be considered a policy issue and separated from technical considerations. Technical work should focus on what is technically attainable and

biologically acceptable, balancing all relevant risks."

A draft Phase II report was distributed for regional review in May 2001. Preliminary conclusions of the Phase II study are as follows: a) install spillway deflectors at The Dalles; b) install additional deflectors on spillway bays which do not have them at Bonneville (6 of 18 bays), McNary (4 of 22 bays), Lower Monumental(2 of 8 bays) , Little Goose (2 of 8 bays); c) review or assess existing deflector performance for current operations (voluntary fish passage spill) and; d) if needed, implement improvements to existing deflectors to optimize performance. Existing flow deflectors at Bonneville, McNary, Lower Monumental, Little Goose and Lower Granite dams were built in the 1970s to minimize TDG for involuntary spill. The goal of re-examining these projects is to design for voluntary fish passage spill up to 120% TDG (like the design at Ice Harbor and John Day) and therefore increase the amount of spill at each project. The draft study also found that, although there are alternatives which would result in reducing TDG, there are no technically feasible alternatives that would meet both the current state TDG standard of 110% and provide safe passage for listed fish. The study found that with the best practicable technology and safe river passage for listed fish, it would cost between an estimated $3 and $4 billion at the Corps' eight mainstem projects to attain approximately 115 percent TDG.

The Corps also began investigating system-wide approaches to spill management and power production as called for by the 1998 BiOp at Chief Joseph Dam. The Chief Joseph Gas Abatement Study was initiated to evaluate flow deflectors as a short-term measure, to explore side-channel options as a long-term alternative, to evaluate the benefits achieved by combining Chief Joseph and Grand Coulee gas abatement projects, and by evaluating Chief Joseph in context of optimized system operation. The Corps is currently seeking congressional appropriations to install flow deflectors by 2005.

Temperature

At times during the warmer summer months, the water temperatures in the Columbia and Snake River basin are above some or all of the states' water quality standards for temperature. For the Snake River above Lower Granite pool, the Idaho water temperature standard is 22 degrees C (71.7 degrees F). From the Lower Granite pool to the confluence of the Snake and Columbia rivers, the Washington water temperature standard is 20.0EC (68EF) due to human activities. When natural conditions exceed 20.0EC (68EF), no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3EC (0.5EF) nor shall such temperature increases, at any time, exceed 0.3EC (0.5EF) due to any single source or 1.1EC (2.0EF) due to all such activities combined. For the

Columbia River from Grand Coulee to Priest Rapids Dam, the Washington water temperature standard is 18.0EC (64.4EF) due to human activities. When natural conditions exceed 18.0EC (64.4EF), no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3EC (0.5EF). From Priest Rapids Dam to the Washington-Oregon Border (river mile 309.3), the Washington water temperature standard is 20.0° C (68.0°F) due to human activities. When natural conditions exceed 20.0°C (68.0°F), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C (0.5°F). For the Columbia River from the mouth to the Oregon-Washington border, there are Oregon and Washington standards. The Washington standard is 20.0° C (68.0°F) due to human activities. When natural conditions exceed 20.0°C (68.0°F), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C (0.5°F) nor shall such temperature increases, at any time, exceed 0.3EC (0.5EF) due to a single source or 1.1EC (2.0EF) due to all such activities combined. The Oregon water temperature standard is no measurable surface water temperature increase of more that 0.25°F resulting from anthropogenic activities is allowed when surface water temperatures exceed 68.0°F (20.0°). Montana's water temperature standard is a 0.5°C (1°F) maximum increase above naturally occurring water temperature is allowed within the range of 0°C to 18.9°C (32°F to 66°F); within the naturally occurring range of 18.9°C to 19.2°C (66°F to

66.5°F), no discharge is allowed which will cause the water temperature to exceed 19.4°C (67°F); and where the naturally occurring water temperature is 19.4°C (67°F) or greater, the maximum allowable increase in water temperature is 0.25°C (0.5°F).

The construction and existence of the dams may contribute to a shift in the temperature regime of the river, and as noted by the court, other factors contribute to the main stem river temperatures. The SOR EIS examined water temperatures and generally concluded similar effects. Further analysis of the lower Snake River will be included in the Lower Snake River Juvenile Salmon Migration Feasibility Study and for the mainstem Columbia and Snake Rivers in the basin wide water quality plan as described further in Attachment D.

Water temperatures sometime exceed state water temperatures at some locations within the reservoirs at Chief Joseph and Dworshak, and within the reservoirs and fishways at the four lower Snake and four lower Columbia rivers projects. In the Corps judgment, and consistent with the findings made by Judge Frye in National Wildlife Federation, et al. v. U.S. Army Corps of Engineers, Civ. # 99-442-FR (D.Or. 2001), based on historical data as well as monitoring that has taken place since the construction of the dams, the dams are not the sole cause of the exceedences of state water quality standards in the lower Snake River (Id.

At Page 27 –Opinion, line 19-20). More importantly, in the Corps judgment, we do not have reliable information that would cause us to conclude that any structural modifications of mainstem projects would reduce water temperature in the reservoirs or have a significant effect on temperature water quality standard exceedences. Operational actions at Corps' storage projects can be used to affect water temperatures downstream; however, these actions can be taken to moderate temperatures of water already exceeding temperature standards rather than offsetting exceedences related to the presence of the dams. Nonetheless, to date, the Corps has implemented several actions to help alleviate adverse water temperature conditions in the Columbia River Basin. Selective withdrawal systems to release water from one or more specific depths were designed by the Corps in the early 1970s and are present at Libby and Dworshak dams. Operation of Dworshak dam for flow augmentation for juvenile fish in the summer months has also aided in reducing water temperatures in the lower Snake River. The Corps intends to operate Dworshak in this manner and consistent with the NMFS 2000 Bip, will explore further drafts in the fall for the moderating downstream water temperatures consistent with species preservation and enhancement.

Based on our analysis of existing data, the Corps has concluded that the operation of the mainstem Corps dams (excluding Dworshak and Libby), on the Snake and Columbia rivers has no significant impact on water

temperatures. Based on this information, we conclude that the operation of the Corps dams is not causing temperature exceedences and other than those noted above, there are no operational changes that we can undertake to significantly decrease river water temperatures. In fact, analysis of available data by the Corps in the System Operation Review EIS, indicates that the existence of the dams may cause a temporal shift in the temperature curve over natural conditions, but in our opinion, this has not effected the number or severity of exceedances to any significant degree. Accordingly, the Corps is not now seeking variances for temperature standard exceedences. Nonetheless, consistent with Congressional appropriations and directive, the Corps is committed to working with the states and EPA to monitor and further study this issue. If further data reveals a causal connection between the dams and temperature exceedences, this could form the basis for the creation of TDMLs covering temperature. As noted above, should such a TDML be established for all major contributors to temperature exceedence within the basin, the Corps is committed to taking whatever practicable steps are necessary to meet those limits, subject to Congressional directive and appropriation.

FUTURE ACTIONS

In developing the 2000 Biological Opinions, NMFS and USFWS, in coordination with EPA, the Corps, Reclamation, and BPA, considered

respective ecological objectives of the ESA and the CWA. In many instances, actions implemented for the conservation of ESA listed species will also move toward attainment of water quality standards (e.g. reducing TDG and temperature). However, we recognize that, at least in the short run, there will also be instances where implementation of actions for the conservation of ESA listed species will result in exceedances of water quality standards. There are also additional actions that are appropriate for addressing water quality but which are nonessential for the survival and recovery of the listed species and thus are not required components of the ESA RPA. Any plan to address water quality issues is likely to require lengthy study and implementation exceeding the scope and duration of the NMFS 2000 BiOp.

Therefore, federal agencies proposed a process to address water quality and included it as Appendix B to the NMFS 2000 BiOp. This appendix charts a course for development of a water quality plan for the mainstem Columbia and Snake rivers to address CWA objectives. The scope of this plan is broader than the FCRPS and would include additional actions to improve mainstem water quality by reducing TDG and temperature. We anticipate that some of these actions must and will be undertaken by entities other than the Federal Action Agencies. Although Appendix B is not a water quality plan per se, it provides a procedure for development of a plan and identifies action the plan would likely contain to move toward attainment of water quality standards for the FCRPS. Appendix B refers to items

also called for in the RPA for the FCRPS as a nucleus of actions for the water quality plan. These actions enhance the survival and recovery of the listed species and thus are components of the RPA. Appendix B also identifies actions for the FCRPS that further CWA objectives but are not also in the ESA RPA. These actions are listed in Table B-3 of Appendix B. These are studies to investigate additional measures to reduce TDG and temperature that may be considered for implementation in the future. These studies are appropriate ESA conservation measures that will require further ESA consultation when they are developed, analyzed, and proposed for implementation. Most importantly, the water quality plan should establish quantifiable TMDL allocations covering temperature and TDG for FCRPS projects on the Columbia and Snake rivers. It is also critical that any meaningful water quality plan must also include TMDLs for all activities significantly effecting TDG and temperature, not limited to the FCRPS projects. Subject to available funds and Congressional directives, the Corps is committed to implementing Appendix B of the NMFS 2000 BiOp. The Corps will do so by working with the Federal Action Agencies to develop and implement this water quality plan and undertaking all practicable alternatives to accomplish the TMDL standards in the plan.

Further discussion of the actions being considered for development of a water quality plan are shown in Attachment D, Studies

In summary, the Corps will seek to harmonize operations to comply with both the Endangered Species Act requirements, (as reflected by the RPAs recommended by the NMFS), and the states' and tribal water quality standards. To the extent this is not possible, the Corps with NMFS assistance will seek variances for TDG standards for voluntary fish passage spill. The water quality information the Corps has or develops will be provided to EPA, the states and appropriate tribes for their use in developing TMDLs. The Corps will continue to work with the Federal agencies and Tribes to consider water quality issues along with ESA actions to benefit listed species including ESA operations, studies, and construction items. When the states, tribes and EPA and other federal agencies develop additional information, including TMDLs for the Columbia River Basin, the Corps will be able to determine what practicable actions it can take, subject to Congressional directive and appropriations, to achieve compliance with those water quality parameters. Until that time, the Corps, as it has in the past, will provide information on water quality at its dam and reservoir projects covered by the 2000 Biological Opinions in order to assist the four Northwest states, tribes, EPA and other federal agencies in this process.

Ultimately, in the proper exercise of its discretion, if there is a truly irresolvable conflict between an action the Corps believes that it must take to comply with the Endangered Species Act on the one hand, and a state (or tribal) water quality standard on the other, and the Corps does not

receive a variance from the appropriate state agency, the Corps believes that the requirements imposed by the Endangered Species Act override the requirements of Sec. 313 of the Clean Water Act. Should such a conflict exist, the Corps may decide to operate its reservoir projects in a manner inconsistent with state and tribal water quality standards and administrative process. We believe this is consistent with Congressional intent as interpreted by the Supreme Court in the TVA v. Hill (437 U.S. 153; 98 S. Ct. 2279; 57 L. Ed. 2d 117; 1978). There, the Supreme Court indicated that Congress intended that preservation of endangered species be given the highest priority. In effect, federal agencies must do all they can within their authorities, to conserve endangered species when undertaking authorized programs and activities.

Lastly, requests for voluntary spill for non-ESA reasons which would exceed applicable state water quality standards may be considered, but the requesting entity will be required to coordinate with the appropriate state and Tribal agencies in such cases and obtain any variances required by law from those agencies.

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The Magnuson-Stevens Fishery Conservation Act requires Federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH). Chapter 12 of NMFS' BiOp addresses the EFH designation for "ground fish" which are limited to the estuary of the Columbia River and proposed EFH for salmon which covers the Columbia River below Chief Joseph Dam, the Snake River below Hells Canyon Dam, and most tributaries in those areas.

FISH AND WILDLIFE COORDINATION ACT

The Fish and Wildlife Coordination Act requires consultation with USFWS when any water body is impounded, diverted, controlled or modified for any purposes. The last Coordination Act Report by the USFWS on FCRPS operations was prepared with the System Operation Review (SOR) EIS. The USFWS was an active member of the consultation with NMFS on anadromous species as well as the agency responsible for the consultation on resident fish and wildlife species. The Corps considers the operations to be within the operating strategies analyzed by the USFWS during SOR, and will continue to coordinate with the USFWS during the implementation of the BiOps.

PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND

CONSERVATION ACT

Pacific Northwest Electric Power Planning And Conservation Act created the Northwest Power Planning Council, an interstate agency with members from Idaho, Montana, Oregon and Washington. The council is responsible for adopting a Fish and Wildlife Program for restoring and protecting fish and wildlife populations in the basin. The Fish and Wildlife Program is updated periodically. During consultation, the Corps and other Federal agencies coordinated with the council in their Multi-Species Framework Project which was developing visions, strategies and alternatives for recovering fish and wildlife in the basin. The Federal agencies and Project Framework staff jointly evaluated alternatives for system operations and configuration. The Corps will continue to coordinate implementation of the actions identified in the BiOps with the Northwest Power Planning Council and provide input into the periodic updates of their Fish and Wildlife Program.

ENDANGERED SPECIES ACT

This 2001 ROCASOD is the Corps response to the BiOps issued by NMFS and USFWS under Section 7 of the ESA. The Corps will utilize the annual process of submitting one and five year plans and receiving the findings letter from NMFS and USFWS to determine if future actions are consistent with the conclusions of the BiOps and that the Corps actions are

not jeopardizing the continued existence of the listed species. There may be instances for separate consultation under Section 7 for individual actions called for in the BiOps. There may also be ESA Section 10 permits for studies. In that case consultation on that particular activity may be needed before full implementation of the BiOp activity can proceed.

OTHER ENVIRONMENTAL LAWS AND REGULATIONS

In implementing the terms and conditions of the BiOps, the Corps will comply with all laws, regulations, and executive orders enacted or promulgated to protect or conserve environmental resources. These laws, regulations, and executive orders may include but are not limited to wetland protection; Comprehensive Environmental Response, Compensation and Liability Act; Archaeological Resources Protection Act; Clean Air Act; Migratory Bird Treaty Act; Coastal Zone Management Act; Safe Water Drinking Water Act; Flood Control Act of 1944; Wild and Scenic Rivers Act; Marine Protection, Research, and Sanctuaries Act; River and Harbors Acts; Executive Orders and CEQ Guidelines and Memorandum; etc.

Documentation of compliance with related environmental laws, rules, regulations and executive orders will be integrated to the extent possible into the NEPA and planning processes.

ATTACHMENT D

STUDIES

Lower Snake River Juvenile Salmon Migration Feasibility Study

In response to the National Marine Fisheries Service 1995 BiOp, the U.S. Army Corps of Engineers initiated the Lower Snake River Juvenile Salmon Migration Feasibility Study. The purpose of the study is to evaluate and screen structural alternative measures that may increase the survival of juvenile anadromous fish through the Lower Snake River Project (which includes the four lowermost dams operated by the Corps on the Snake River- Ice Harbor, Lower Monumental, Little Goose, and Lower Granite) and assist in recovery of listed salmon and steelhead stock.

This lower Snake River spans a 140-mile stretch of the river, from its confluence with the Columbia River (near Pasco, Washington) to just above Lewiston, Idaho. There are four dams and reservoirs on the lower Snake River that were designed, constructed and are operated by the Corps. They include Ice Harbor (put into operation in 1961), Lower Monumental (1969), Little Goose (1970), and Lower Granite (1975). Congress

authorized these projects for hydropower production, inland navigation, irrigation, recreation, and fish and wildlife purposes.

The study examines the following four major alternatives for the lower Snake River dams:

1) maintain the existing fish passage system with current and planned improvements;
2) maximize transportation of juvenile fish;
3) make major system improvements such as removable spillway weirs, behavioral guidance structures, surface bypass, gas abatement measures, and turbine passage improvements; and
4) permanent breaching of the dams.

In December 1999, the Corps released a draft Environmental Impact Statement (EIS) on these alternatives for public review, as stipulated in the 95 BiOp. In order to allow all affected parties in the region to address the issues within the broader context of other ongoing regional efforts for Columbia River Basin fish, a preferred alternative was not identified in the draft EIS. In conjunction with the Federal Caucus, the Corps held 15 public meetings throughout the region (Oregon, Idaho, Washington, Montana, and Alaska).

The Corps continues to progress toward a final EIS. The Corps is now processing the considerable volume of comments received and is analyzing the substantive issues raised. At this point in the evaluation, all four alternatives are still under consideration. The information and measures called for in the 2000 BiOp will be a factor in the Corps' choice of a preferred alternative in the final EIS. It is anticipated that the final EIS ,with a preferred alternative, will be completed in 2001.

The 2000 BiOp RPA considers dam breaching to avoid jeopardy. The BiOp indicates that breaching should be kept as a future option, and establishes a schedule and triggers for determining whether to pursue this option. The RPA recognizes that breaching is a major action requiring NEPA compliance and congressional authorizations. In addition, the RPA lays out an expedited schedule to allow for the quick implementation of breaching or other more aggressive actions if necessary.

System Flood Control Study

The first step in the study process is to fund an Initial Appraisal (Section 216) in FY01 through the O&M appropriations. The purpose of a 216 Initial Appraisal (IA) report is to review operation of completed Federal projects and recommend project modifications "when found advisable due to significant physical or economic conditions … and for improving the

quality of the environment in the overall public interest." The IA will be a fairly simple report which will rely heavily on the results of the February 1997 NWD Report, "Columbia River Basin System Flood Control Review Preliminary Analysis Report," to establish whether change to the existing flood control system is warranted. The IA will demonstrate the need for initiating a General Investigation Reconnaissance Report, and recommend it to be initiated in FY03 through the normal budgetary process.

The Reconnaissance Report is 100 percent Federally financed and is usually limited to $100,000. The report outputs will be; (1) a determination of need for feasibility studies, (2) a determination of Federal interest, (3) completion of a 905(b) analysis, (4) preparation of a Project Management Plan (PMP), (5) access level of interest and support of non-Federal entities, and (6) negotiation of a Feasibility Cost Sharing Agreement (FCSA). It is expected that no non-Federal entity will want to cost share for the feasibility study and hence a recommendation for 100 percent Federal responsibility may be the outcome. The development of a PMP will be the major task of this report and it will serve the purpose of meeting the action called for in the BiOp of a detailed study plan to be reviewed by "NMFS and all interested agencies, including a peer-review panel."

The Feasibility Study will be the vehicle to investigate potential changes to the system flood control. Feasibility Studies usually take 18 to 36 months.

Both the Reconnaissance and Feasibility Reports will require appropriations by Congress. Assuming the IA could be completed in the summer of 2001, the earliest we can expect Congressional study funding will be FY03. This will not address the BiOp recommendation for completion of a draft feasibility report in 2005.

VARQ

An EIS is being prepared for alternative flood control operation in the upper Columbia, including VARQ ("vair-Q"), or variable discharge. VARQ allows local and system flood control requirements to be met, while better providing for refill and fish flow operations at Libby and Hungry Horse Dams in Montana. It would require slightly deeper drafting of Grand Coulee during certain years to maintain system flood control. Libby is on the Kootenai River, and Hungry Horse is on the South Fork Flathead rivers, both tributaries to the Columbia. Grand Coulee is on the mid Columbia mainstem.

The EIS will also document operations for fish at Libby, Hungry Horse and Grand Coulee, including spring flow augmentation for Kootenai River white sturgeon, minimum summer flows for bull trout in the Kootenai and Flathead, summer flow augmentation from Libby, Hungry Horse and Grand Coulee for Columbia salmon outmigration, and fall flow augmentation for

salmon from Grand Coulee. These operations have been implemented since the 1995 BiOps.

The alternative flood control operation was not developed to alleviate any perceived deficiency in current flood control. It was developed to improve refill of Libby and Hungry Horse reservoirs in light of springtime fishery operations. The operation does not affect the system flood protection at Portland. Since the Libby and Hungry Horse flood control operations are altered, the operation of Grand Coulee Dam in eastern Washington compensates so that the system flood remains the same at Portland. VARQ is being implemented in response to the December 2000 US Fish and Wildlife Service and National Marine Fisheries Service Biological Opinions on operation of the Federal Columbia River Power System's effects on threatened and endangered fish stocks.

Since implementation of the NMFS 1995 Biological Opinion the five storage reservoirs of the 14 main FCRPS projects operate generally to winter flood control elevations. The Biological Opinions recommend the five storage projects operate to be at their April 10 flood control elevations so that the projects can refill during the spring snowmelt season, and offer the most available water for flow augmentation for migrating fish. The reservoirs should be full by June 30. Then they draft in July and August for summer flow augmentation for fish. VARQ would allow less drafting at Libby and

Hungry Horse during the January through April 10 time in years with low and medium runoff forecasts, and provide better assurance of refill, while also allowing for spring and summer flow augmentation for listed species of fish (Kootenai River white sturgeon, bull trout in the Flathead and Kootenai, and Columbia River salmon species). Reservoir fish and recreation would also benefit from such an operation. VARQ is the Corps' version of Montana Fish, Wildlife and Parks' Integrated Rule Curves (IRCs) during the winter and spring, which allow somewhat deeper drafting than does VARQ in low and medium runoff forecast years. IRCs were designed to incorporate a component for power generation. Implementation of VARQ or an analog is part of the Kootenai white sturgeon recovery plan as well as the USFWS 1995 BiOp, and again, now is requested under the recent BiOps.

In Montana v. U.S. Army Corps of Engineers and Bureau of Reclamation, Civ. No. 97-97-M-LBE, District of Montana 1977, the State of Montana challenges the Corps and Reclamation operation of Libby and Hungry Horse dams is not in compliance with the Northwest Power Planning Council Fish and Wildlife Program and specifically IRCs.

In FY 2001, the emphasis will be on scoping and initiation of hydraulic/hydrologic/flood control studies. Those studies will continue into FY 2002. The necessary hydrologic studies will require at least until FY02

to complete, and fisheries and other impact analyses will extend the effort some time beyond that. It is currently estimated that preparation of study reports and a draft EIS, followed by required public reviews and finalization, would likely make completion of the final EIS in FY04.

Water Quality Plan

The purpose of the Water Quality Plan is to ensure progress in the long-term goal of working toward the CWA related water quality standards primarily for TDG and temperature, but for other parameters as well. The plan would work through an adaptive management process and through the Total Maximum Daily Load (TMDL) implementation process to accomplish the following:

· Define and evaluate specific water quality problems (systemwide and project specific), and develop a plan of action to solve or reduce these problems.

· Make operational and capital investment decisions at the Federal projects to reduce levels of total dissolved gas generated by spill and to reduce the reliance on spill as one of the primary means of assisting juvenile fish passage.

· Implement and report on adequate physical, biological, and chemical (with a priority on TDG and temperature) monitoring to assess compliance with state and Tribal water quality standards and other special conditions that may apply.

· Implement modeling as part of the BiOp process and the TMDL process to better assess and act on water quality issues of TDG and water temperature.

The Corps is working with other federal agencies to develop a Project Management Plan (PMP) which will define how the Corps will manage, conduct and coordinate its portion of the work and commitments for the Water Quality Plan. The PMP proposes a three phase study approach (see Figure D-1) The first phase focuses on the technical aspect of water quality related investigations with some limited engineering and biological analysis. The work conducted in this phase would vary from preliminary or reconnaissance level analysis (for engineering, biology, and water quality investigations
needed for the TMDL process) to detailed (feasibility level) for water quality modeling. Existing information, where possible, will be relied upon for these analyses. The second phase is the preparation of detail engineering analysis, completion of environmental documentation (NEPA, ESA, etc), and compilation of budgetary documents to support seeking appropriations. The

last phase is receiving appropriations and construction. This process does not preclude accelerating specific measures for implementation at any time through this process if deemed appropriate.

WATERQUALITYPLAN

The PMP documents the assumptions and scope, defines work tasks, product, assignment of responsibilities, and the level of detail that will be necessary during this effort. The PMP will provide the Corps and other federal agencies with a means for cost and schedule control, establishes the basis for changes, promotes both internal and external communications, and precludes potential review problems for the Water Quality Plan. In summary, the PMP will be the road map, which will be used to guide the development of the Water Quality Plan.

ATTACHMENT E

ACRONYMS and ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
Action Agencies	Corps, Reclamation, and BPA
BiOp	Biological Opinion
BPA	Bonneville Power Administration
C	degrees in Celsius
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
DOI	Department of Interior
E	Endangered
EFH	Essential Fish habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
F	degrees in fahrenheit
FCRPS	Federal Columbia River Power System
FCSA	Feasibility Cost Share Agreement
FELCC	firm energy load-carrying capability
FPE	fish passage efficiency
FPOM	Fish Passage O&M Coordination Team
FPP	Fish Passage Plan

FR	federal register
FY	fiscal year
HGMP	Hatchery and Genetic Management Plans
IA	Initial Appraisal
IDFG	Idaho Fish and Game
IRCs	Integrated Rule Curves
IT	Implementation Team
kcfs	thousand cubic feed per second
LCA	Libby Coordination Agreement
LCREP	Lower Columbia River Estuary Plan
LSRJSMFR/EIS	Lower Snake River Juvenile Salmon Migration Feasibility Report/ Environmental Impact Statement
MAF	million acre-feet
MOAs	Memorandum of Agreements
MOP	minimum operating pool
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
1995 BiOp	NMFS Reinitiation of Consultation on 1994-1998 Operation of Federal Columbia Power System and Juvenile Transportation Program in 1995 and Future Years on March 2, 1995
1998 BiOP	NMFS Supplemental Biological Opinion, Operation of Federal Columbia River Power System issued May 14, 1998
1999 Multi-Species BA	Multi-Species Biological Assessment of the Federal Columbia Power System – December 21, 1999
NMFS	National Marine Fisheries Service

NMFS 2000 BiOp NMFS Biological Opinion: Reinitiation of Consultation on Operation of the Federal Columbia Power System, Including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation Projects in the Columbia Basin Biological Opinion issued by National Marine Fisheries Service on December 21, 2000

NPPC Northwest Power Planning Council

NPRs nonpower requirements

NWD North Western Division

OA/EIS 1992 Columbia River Salmon Flow Improvement Measures Options Analysis/Environmental Impact Statement

PAs Programmatic Agreements

PL Public Law

PMP Project Management Plan

PNCA Pacific Northwest Coordination Agreement

Reclamation Bureau of Reclamation

RM&E research, monitoring, and evaluation

ROCASOD 2001 Record of Consultation and Statement of Decision

ROD Record of Decision RPA Reasonable and Prudent Alternative

SCS System Configuration Study

SEIS 1993 Columbia and Snake Rivers Flow Improvement Measures for Salmon Supplemental Environmental Impact Statement

SHPO State Historic Preservation Officer

SOR System Operation Review EIS

T Threatened

TDG Total Dissolved Gas

TMDL Total Maximum Daily Load

TMT	Technical Management Team
2000 Supplemental BiOp	NMFS Supplemental to the Biological Opinion signed March 2, 1995 and May 14, 1998, For the Same Projects dated February 4, 2000
USFWS	United States Fish and Wildlife Service
USFWS 2000 BiOp	USFWS Biological Opinion: Effects to Listed Species from Operations of the Federal Columbia River Power System issued by the U.S. Fish and Wildlife Service on December 20, 2000
VARQ	"vair-Q" or variable dischage
WAC	Washington Administrative Code
WQT	Water Quality Team